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YELLOW FEVER INVESTIGATIONS IN WEST AFRICA

The two articles following present a most interesting résumé of the history of yellow fever on the West Coast of Africa, a note on the recent work in connection with the researches on the epidemiology of the disease, and resolutions of a medical conference on the methods of control.

Sir George Buchanan, Senior Medical Officer of the Ministry of Health of Great Britain, points out in his report the difficulty and the factors involved in locating the endemic foci of yellow fever on the West African Coast. The disease dies out spontaneously in a community with a stationary population, for lack of susceptible material, and the endemic center will, therefore, not be found where epidemics occur among the natives.

In investigating the relationship of Noguchi's *Leptospira icteroides* to yellow fever, the research workers at Lagos and Accra failed in their attempts to inoculate guinea pigs with cultures from yellow fever patients or by means of mosquitoes. The Yellow Fever Commission of the Rockefeller Foundation also failed in their attempts to inoculate guinea pigs and found West African monkeys and chimpanzees immune. They were successful, however, in inoculating macaque monkeys imported from India, the *Macacus rhesus* being especially susceptible.

It has been found that yellow fever may be conveyed not only by bites of mosquitoes and by inoculation with a syringe, but also by smearing infected blood on the unbroken skin, and it is considered probable that Professor Stokes received the infection in that manner.

The recrudescence of yellow fever in Brazil makes this report and the resolutions of the medical conference on the control of yellow fever of especial interest at this time.

YELLOW FEVER IN BRITISH WEST AFRICA

REPORT PREPARED BY THE COLONIAL OFFICE, LONDON, AND COMMUNICATED TO THE MAY, 1928, SESSION OF THE PERMANENT COMMITTEE OF THE INTERNATIONAL OFFICE OF PUBLIC HYGIENE BY SIR GEORGE BUCHANAN, DELEGATE FOR GREAT BRITAIN

1. HISTORY

The history of yellow fever in West Africa reaches back to the foundation of the earliest British colonies on the coast; and the figures collected by the late Sir Rupert Boyce show that it has appeared

almost every year for more than a century, though there have been several gaps of a few years during that period. The foundation and settlement of Freetown appear from the commencement to have been impeded by outbreaks of yellow fever, and in 1826, out of a garrison of 535 soldiers, 115 died in about two months. The first detachment of troops which arrived at Cape Coast Castle in April, 1823, numbered 128, but only 1 survived by the end of 1824. The disease was not confined to white troops and civilians ashore. During the first half of the nineteenth century there was a great amount of suffering and loss of life among the men of the British Navy engaged on the West Coast in the suppression of the slave trade.

Boyce arrived at the conclusion that by reason of its duration, yellow fever must be endemic and, as the total number of white in West Africa has never been enough to maintain the virus continuously, he assumed, with good reason, that the disease exists in a mild form among the native population.

There was a fairly heavy mortality from yellow fever during the year which followed Boyce's visit to Africa in 1910. In 1913, 35 cases were notified in Nigeria, and 20 in the Gold Coast, and a commission, with Sir James Fowler as chairman, was appointed by the secretary of state. The work of this commission was unfortunately brought to an abrupt end in 1914 by the outbreak of the Great War. Much useful information was accumulated, and the important conclusion was reached that yellow fever is not spread uniformly over the whole of West Africa, but is endemic in certain foci, the discovery of which must be regarded as of prime importance.

During the next decade, there were no epidemics, though a few cases were notified every year. Throughout the period 1914 to 1925, 89 cases were recorded in the Gold Coast and 16 cases in Nigeria. In July 1920, the Yellow Fever Commission of the International Health Section of the Rockefeller Foundation, with Gen. R. E. Noble as director, arrived in Lagos. Doctor Guiteras and other yellow-fever experts were included in the commission and Dr. A. E. Horn was attached as liaison officer. The principal object of this commission was to investigate the connection of Noguchi's *Leptospira icteroides* with yellow fever; but this they could not do because there were no cases of the disease. They were able, however, to accomplish a useful piece of work by examining the local rats for leptospiral organisms and finding that they were free from them.

History of the recent outbreak.—There was a recrudescence in the Gold Coast during 1923, when 22 cases were notified; in 1924, there were 13 cases; in 1925 there were 10, and, in addition, there were 21 in Nigeria; in 1926, there were 27 in the Gold Coast, and 11 in Nigeria. During the year 1927 only 3 cases were notified in Nigeria, but there were 107 cases, with 41 deaths, in the Gold Coast, and the

disease was known to be present in at least 10 large towns. These figures are no more than an indication of the true numbers, because many of the cases were not notified. For example, there was evidence that a considerable number of cases of yellow fever had occurred at Asamankese and in Late before the existence of the disease was discovered.

The recent outbreak of yellow fever in the Gold Coast began early in 1926, when 3 European and 4 African cases were reported from Nsawam, a large commercial center 25 miles from Accra; in May, cases were reported from Cape Coast and Saltpond, and on July 3 a European died from the disease in Accra. He had recently visited Nsawam and Asamankese; other cases were traced to the latter town and further investigations showed that a serious epidemic had been raging there.

In March, 1927, there was an outbreak in Accra, and between March 26 and May 25 there were 16 cases in the town, with 11 deaths. Three of the patients were Europeans, four were Syrians, and nine were Africans. One of the outstanding features of the recent epidemic in the Gold Coast has been the preponderance of the disease among the natives. The case mortality was lower in the Africans than in Europeans and Syrians, but they were not immune.

The Europeans and Syrians who died from yellow fever in Accra were all inhabitants of the African township; there were no cases in the residential area which is reserved for white races. A compulsory evacuation order of the native township by Europeans and Syrians was brought into force, as a temporary measure, on May 20, 1927, and accommodation for 206 Europeans and 156 Syrians was found outside the infected area; no further cases occurred among people of these races, with the exception of one Syrian who disobeyed the order and remained behind. The history of former outbreaks is the same; in 1922-23 all the deaths among Europeans occurred among those who lived in the native quarter, and, in view of this danger, commercial firms have been advised to provide quarters for their European employees in places away from native dwellings. Steps have also been taken to see that the rule is enforced by which the presence of native children in the European reserve is not permitted at any time, and servants' wives are prohibited from sleeping there.

The patients and their contacts were isolated and screened, but, unfortunately, the majority of the Syrian and African cases were not discovered until the fourth day, by which time the period of infectivity was over. In order to protect shipping and other ports and, incidentally, the reinfection of Accra from other places, all passengers were medically inspected before embarking or disembarking, and shipping was required to anchor at least a thousand yards from the shore. A thorough search was made for the breeding places of mosquitoes, and

the penalties inflicted on persons convicted of allowing *Aedes aegypti* to breed on their premises were increased. Public functions were curtailed, and efforts were made to see that all meetings dispersed before nightfall.

A conference was held in June between representatives of the Government medical and sanitary services and the director of the Rockefeller Commission, which is working in Nigeria.

Dr. P. S. Selwyn Clarke, the acting deputy director of sanitary services, draws attention to the dilapidated and insanitary hovels in the congested area of the native town where yellow fever occurred, and he recommends that they should be demolished. The water supply of parts of the town of Accra is under such low pressure that the water is obtained intermittently or with difficulty; the inhabitants therefore store it in all kinds of receptacles, and these form potential breeding places for *Aedes aegypti*. Dr. Selwyn Clarke therefore recommends improvement of the supply by the construction of a large reservoir.

The Yellow Fever Commission of the Rockefeller Foundation, which is now working in West Africa, was organized in 1925 with Dr. Henry Beeuwkes as the director, and the laboratory was in operation by the end of 1926. The late Prof. Adrian Stokes was attached to the scientific staff, which originally consisted of 10 members.

2. THE CHARACTER OF THE DISEASE

With regard to the nature of the disease and its relation to the yellow fever of the Western Hemisphere: As long ago as 1842 Dr. R. R. Madden, a commissioner appointed to report on the climate of the West Coast of Africa and its influence on health, stated: "I would defy any man to point out the difference between the cases of yellow fever as they exist in Cuba or Jamaica and those of African local fever as it exists on the West Coast. Of the identity of West Indian yellow fever and African local fever I have no doubt; my acquaintance with them has unfortunately been of too intimate and personal a kind to leave me in ignorance of the similar symptoms and character of both." Madden's opinion is now almost universally accepted; and Doctor Scanell and other clinicians on the staff of the Yellow Fever Commission, with wide experience with yellow fever in South America, are agreed that there is not the slightest doubt that it is the same disease in both continents. Drs. Blair Aitken, A. Connal, G. M. Gray, and E. C. Smith, as the result of their investigations at Lagos, concluded that the symptoms and morbid anatomy of the West African disease were typical of yellow fever. Dr. Oskar Klotz, Dr. W. G. MacCallum, and Dr. Winifred Simpson have made a comparative study of material from a number of cases which had

died in Africa and in South America. They could detect no fundamental points of distinction; the characteristic changes in the liver, in the Malpighian corpuscles of the spleen and in the kidney (with the calcareous cylinders of Hoffmann), were found not only in the organs of those who had died in the American tropics but also in those from the West Coast of Africa.

3. THE EPIDEMIOLOGY OF THE DISEASE AND ENDEMIC CENTERS

The epidemiology of the disease is still under investigation. All agree with Boyce that it is endemic and all accept the conclusions of the commission of 1913 to the effect that the endemic center in Africa must be found and attacked before success can be attained. This center can not be Lagos or Accra or any West African port, because epidemics occur there affecting natives; it is not up north in Senegal, because the cold, dry season interrupts the breeding of mosquitoes. Surveys conducted on the Gold Coast, including the Northern Territories, show a relatively low *Stegomyia* index in most of the communities which are large enough to serve as endemic centers of yellow fever. In the Niger Delta and Port Harcourt area, although the larva index is high, the population is too scattered and intercommunication is too difficult for them to serve as endemic centers. Southwestern Nigeria presents a different picture. The towns and cities about Ibadan, which itself has a population of about 250,000, contain several millions of people living under native administration in crowded primitive conditions, and throughout this region the larva index is very high. This area may well be a vast endemic focus from which infection is carried to other places. The disease spreads from its endemic center along the trade routes, by railways, by rivers, by motor car, and, it may be, by aeroplane. Along the seacoast it is carried in small coasting boats. Steel ships do not breed mosquitoes, because their water tanks are covered.

The search for the endemic center is difficult, because visible epidemics do not occur unless there is a constant stream of nonimmune immigration such as was the rule in Havana. The absence of a reliable clinical test for yellow fever, such as the Weil-Felix test for typhus, renders the task more difficult. The method employed by Doctor Scanell in the native towns is to make a daily examination of the urine of those who are sick. Albumin appears in the urine of yellow fever patients on the second day, increases rapidly to a maximum during the next few days, and then disappears entirely in early convalescence. By plotting out the daily quantities, a curve is obtained which is characteristic of yellow fever in places where leptospirosis can be excluded.

4. THE VIRUS OF THE DISEASE AND ITS TRANSMISSION TO ANIMALS

Doctors Connal and Smith, working at Lagos, have investigated the relationship of Noguchi's *Leptospira icteroides* to yellow fever. They made the cultures and inoculated guinea pigs with blood from 13 cases at Lagos, but no leptospirae grew in the cultures, nor did the guinea pigs become ill. No leptospirae were found in the fatal cases; nor were they found in blood films made in six cases, after triple centrifugalization. Attempts to convey the disease to guinea pigs by means of mosquitoes proved fruitless, and Pfeiffer reactions with the serum of five patients and cultures of *Leptospira icteroides* were entirely negative.

Yellow fever has also been investigated in the Government laboratory at Accra, on the Gold Coast, with similar results. Dr. W. A. Young, the director of the laboratory, states in his last annual report that 10 guinea pigs were each inoculated with 5 c. c. of blood taken from cases of yellow fever, but they remained healthy and no leptospirae could be found in the blood, urine, or organs of the guinea pigs or of the patients.

The Yellow Fever Commission of the Rockefeller Foundation also inoculated a large number of guinea pigs, and their results, too, were negative. The guinea pigs remained healthy. They then tried the effect of inoculating West African monkeys, but they were all immune, even the chimpanzees. Their next step was to repeat the experiments with macaque monkeys imported from India, and here they met with success; a disease resembling yellow fever was produced in *Macacus sinicus* by inoculation with the blood of patients during the first three days of illness. These monkeys were only moderately susceptible, but the inoculation of *Macacus rhesus* proved wholly successful. One of these monkeys, which was inoculated with the blood of an African patient in June, 1927, developed a disease like yellow fever and died five days after inoculation. Subinoculation into other monkeys gave positive results and the strain has been successfully carried through a large series of monkeys by the inoculation of blood or serum. All the monkeys died, with the exception of one, which developed fever and recovered; the pathological changes in their organs were identical with those found in the viscera of persons who have died from yellow fever. The virus was passed on from monkey to monkey not only by the inoculation of blood but also by the bites of mosquitoes. *Aedes aegypti* were infective 16 days after feeding on a monkey suffering from yellow fever. Up to the end of 1927, 44 monkeys had been infected by inoculation and 22 by the bites of mosquitoes. The commission have now obtained 5 strains of the virus; 1 from Lagos, 3 from the Gold Coast, and 1 from Dakar. In the last case, citrated blood was sent down from Dakar and inoculated into monkeys at Accra.

Serological experiments have been made, and it has been found that the blood of patients who have recovered from yellow fever immunizes monkeys against the virus; as little as 0.1 c. c. will protect a monkey against several fatal doses. The virus in the blood of monkeys passed through the Seitz asbestos filter, and also through Berkefeld N. and V. filters.

Mosquitoes which have fed on a patient or on a sick monkey remain infected for the remainder of their lives, and it has been found that the most convenient way to preserve the virus is to keep it in mosquitoes. Two or three hundred are fed on a patient, or on a monkey, and are kept until they are required for experiments; some of them live for as long as three months. The bite of a single mosquito may be enough to produce an infection in a monkey. An experiment to ascertain whether the virus could be transmitted to mosquitoes of the second generation was negative.

It has been found that the disease may be conveyed not only by inoculation with a syringe or by the bites of mosquitoes but also by smearing infected blood on the unbroken skin. It is considered probable that the late Prof. Adrian Stokes became infected in this way. He had not been out of Yaba (where there are no *Aedes aegypti*) for 8 days and he had not been in the insectarium for 12 days; but, 4 days before he fell sick, he had inoculated 12 monkeys with the virus, and his colleagues think that he probably infected himself then. At his own request, monkeys were inoculated with his blood and they became infected with yellow fever. The disease has therefore been conveyed from man to monkey, and probably from monkey to man.

THE PROPOSED ANGLO-FRENCH CONFERENCE

The recent outbreaks of yellow fever have not been confined to British territories, but have occurred also in Senegal, where the disease reappeared in 1926. Arrangements have been made for a conference of medical representatives of the British and French West African Governments, to be held at Dakar early in April, in order to discuss the problems which have arisen, and to evolve a scheme of cooperation with the object of controlling the disease.

RESOLUTIONS OF THE WEST AFRICAN CONFERENCE ON THE CONTROL OF YELLOW FEVER AND OTHER DIS- EASES

During the week ended April 28, 1928, medical representatives from several of the West African colonies met at Dakar, Senegal, for the purpose of discussing the clinical characteristics of West African yellow fever and other diseases, their epidemiology, and methods for

their prevention and control. The following official translation of the resolutions passed by the conference was furnished by the American consulate at Dakar:

The conference accepts the principle of the value of periodical conferences, to be convened by arrangement between the governors of the colonies, whenever it appears useful to investigate the situation created by the existence of epidemic diseases.

The following resolutions are made:

That such conferences should in the future include delegates from all of the colonies and territories of West Africa situated between Senegal and Angola.

That every case of epidemic disease, as defined in the International Sanitary Convention, recognized in a colony be reported by telegram and without delay by the governor of the colony in question to the governor of all the other colonies.

Further, this conference suggests the advisability of authorizing the directors of the medical departments of the different colonies to communicate directly with each other detailed information with regard to outbreaks of such epidemic diseases.

That in the present state of our knowledge, and in view of the extreme difficulty of clinical diagnosis, a doubtful case of yellow fever should be reported only after confirmation by inoculation of *Macacus rhesus*, or after subsequent clinical development of the disease or as a result of autopsy.

That the governments should consider the advisability of organizing measures to prevent the introduction of epidemic diseases by way of land frontiers in the manner prescribed by the International Sanitary Convention of 1926. That a distinction should be drawn between imported cases of yellow fever occurring in a place where all prophylactic measures are being taken and nonimported cases.

As regards the latter, the attention of the administrative and sanitary authorities should be drawn to the importance, from an international standpoint, of not applying strict quarantine measures in the case of ships or persons arriving from a colony where isolated cases of yellow fever have been reported. By isolated cases is meant cases occurring at intervals of more than 12 days.

This definition will not, of course, be accepted unless the authorities of the noninfected colonies are satisfied that all steps have been taken in the infected colonies as regards cases, premises, and ships to obviate the possibility of the spread of the disease, and that a report of measures taken with regard to ships be furnished to the captains or indorsed on the bills of health.

Such action will go far to prevent unnecessary quarantine measures in other ports visited during the voyage. That the West African colonies establish an epidemiological bureau of which one or more members, or any other medical officer of the colonies designated, can be sent at the desire of one of the other colonies at any time. These officers will be authorized to act as liaison officers and will furnish to their governments all information relating to epidemiological factors, sanitary conditions and measures taken to prevent the spread of epidemic diseases in the colony or colonies in question.

That it is now established that the *Macacus rhesus* is susceptible to the virus of yellow fever in West Africa, and that yellow fever can be reproduced in this monkey either by inoculation of virulent blood, or by the bite of infected *Aedes aegypti*.

That although the virus disappears rather rapidly from the circulating blood of the patients, it can be preserved in the blood *in vitro* for a long period (of which the exact duration has not yet been determined), so that the dispatch of samples of citrated blood to the laboratories will in future enable a diagnosis to be made in suspected cases and also permit researches such as studying the limitations of endemic areas in every colony.

That recent investigations have definitely proved the existence among African natives of yellow fever in all of its forms from the most mild to the most severe. This recent knowledge enables us to hope for important progress in the experimental study of yellow fever.

The conference expresses the wish that the scientific organizations of the colonies interested should continue in close collaboration in the research to complete our knowledge of yellow fever.

The conference considers it desirable that this collaboration should take the form not only of the regular interchange of correspondence and of material for research, but also of reciprocal visits between laboratories.

That the conference believes that in all cases where the physician is far removed from laboratory facilities, the presence of albumen in the urine should constitute a most valuable diagnostic sign of yellow fever. Accordingly, the appearance and increase in quantity of albumen in specimens coming from many febrile cases in the same locality constitute presumptive evidence of the presence of yellow fever and necessitate the establishment of prophylactic measures.

Consequently, the conference recommends—

(a) That a practical and speedy method of determining the amount of albumen present in the urine should be devised.

(b) That medical officers should be instructed to make systematic daily examinations for the purpose of detecting and estimating the amount of albumen present in their febrile cases.

That the conference considers that as the use of vaccines has up to the present time given contradictory results, while their employment is innocuous, it should be optional in view of our present knowledge of the etiology of the disease.

It should be clearly understood that other prophylactic measures directed against the transmission of the disease must always form the principal means of defense; that the conference believes that no specific treatment of yellow fever exists at the present time.

The attention of medical officers should be drawn to the rapid tendency to pronounced degeneration of the liver, kidneys, and

heart muscles, which is associated with the disease, and to the importance of taking this factor into consideration in the exhibition of therapeutic agents.

That in view of the fact that the patient is infective from the very beginning of his illness, the conference suggests that when there is danger of yellow fever it should be compulsory to notify and to isolate under satisfactory protection against mosquitoes all whites and half-casts and so far as possible all African natives suffering from fever until the possibility of yellow fever has been excluded.

That it has been definitely proved, clinically and experimentally, that African natives are susceptible to infection by the virus of yellow fever and that a part of this population is not yet well informed concerning, and does not yet, as a rule, employ any measure of protection against mosquitoes.

In view of the foregoing, the conference is of the opinion that provision should be made as soon as possible, and in accordance with the laws of the colonies concerned, for separate residential areas.

That the fact has been established that it is possible to transmit yellow fever by the inoculation of infected blood through a break in the continuity of the skin. The conference desires to emphasize the practical importance of this finding.

CURRENT WORLD PREVALENCE OF COMMUNICABLE DISEASES¹

United States, June 3-30, 1928

The mortality from all causes in 68 large cities declined very rapidly during June, and for the week ended June 30 the death rate was 11.4 per 1,000 population (annual basis) as compared with 11.7 per 1,000 in the corresponding week of 1927 and 11.3 in 1926. This is the first week since the middle of March that the average mortality in these cities has not exceeded the mortality in the corresponding week of 1927. The mortality rate for the first half of the year in the 68 cities was 14.0 per 1,000 as compared with 13.2 in 1927; but it was more favorable than in the corresponding period of 1926, when the rate was 14.8, as the result of a rather serious epidemic of respiratory diseases, and it corresponds closely with the mortality rate of 13.9 in the first half of 1925.

Influenza.—The sharp decline in the prevalence of influenza which began in May continued through the month of June; 31 States reported 2,638 cases for the four weeks ended June 30 as compared with 8,500 for the preceding four-week period. A decrease in the number of cases reported occurred in practically all of the States. In Alabama

¹ From the Office of Statistical Investigations, U. S. Public Health Service.

the number of cases dropped from 984 for the four weeks ended June 2 to 332 for the four weeks ended June 30; in Arkansas from 892 to 278; in Georgia from 338 to 96; in Illinois from 501 to 210; in Massachusetts from 275 to 83; in Oklahoma from 762 to 127; in Tennessee from 550 to 224; in Wisconsin from 2,449 to 364. The reported incidence of the disease has been much higher than at the corresponding season of recent years; three times as many cases were reported during June of the current year as were reported during the same month of 1927, and more than twice the number reported for the same period in 1926.

Smallpox.—A marked decrease in the number of cases of smallpox during the month of June was indicated by the reports received from 42 States and the District of Columbia. For the four-week period ended June 30, these States reported 2,100 cases, approximately 1,500 cases less than were reported for the preceding four-week period. With the exception of Michigan, where the number of cases increased from 104 during the four weeks ended June 2 to 195 for the succeeding four-week period, the decline in the prevalence of the disease was general, practically all of the other States showing a very decided decrease in the number of cases reported. In Illinois the number of cases dropped from 240 to 92; in Indiana from 308 to 204; in Iowa from 238 to 118; in Missouri from 197 to 101; in North Carolina from 235 to 144; and in Oklahoma from 415 to 231 cases. The total reported incidence for June was similar to that for the same month of 1927, but higher than in 1926.

Typhoid fever.—Although the reported cases of typhoid fever increased during the month of June, as is normal at this season, the disease was less prevalent than in the corresponding month of either 1927 or 1926. There were 370 cases reported by 41 States and the District of Columbia for the week ended June 30, as against 655 cases in the corresponding week of 1927, and 537 cases for the corresponding week of 1926. Not only were the reported cases fewer in June of the current year, but also the rate of increase was less during these weeks.

The outbreak of typhoid fever in Wisconsin which resulted in 126 cases for the four weeks ended June 3 as compared with 11 cases in the preceding four weeks was quickly brought under control and only 24 cases were reported in the four weeks ended June 30. The principal increases in the disease for June were reported by southern States. In Alabama the number of cases reported rose from 36 in the four weeks ended June 2 to 86 in the four weeks ended June 30; in Louisiana, cases rose from 52 to 123; in Mississippi, from 22 to 75; in North Carolina, from 24 to 55; in Oklahoma, from 17 to 56; in Tennessee, from 39 to 82; and in Texas, cases increased from 15 to 49.

Poliomyelitis.—The cases of poliomyelitis reported by 43 States during the month of June showed only a very slight increase; 119 cases were reported for the four weeks ended June 30—as compared with 105 in the preceding four-week period. Both in 1926 and 1927 the disease was nearly twice as prevalent in June as in May, so that the current increase would seem to be less than is normal for the season. Although the disease continued to be more prevalent than in 1926, cases were less numerous in June than in the same month last year, and there is nothing yet to indicate any recurrence of the epidemic incidence which occurred in the summer of last year.

Only six States reported five or more cases of poliomyelitis in the four weeks ended June 30. These were California, with 23 cases; Maryland, with 6 cases; Massachusetts, with 8 cases; New Jersey, with 5 cases; New York, with 17 cases; and Pennsylvania, with 6 cases.

Meningococcus meningitis.—The meningococcus meningitis incidence declined more rapidly during the month of June than it had during May. There were 347 cases reported by 42 States and the District of Columbia for the four-week period ended June 30—approximately 150 cases less than were reported for the four weeks ended June 2, when 493 cases were reported, which was a decrease of approximately only 50 cases from the preceding four weeks. While a decline is shown in the prevalence of the disease, the number of cases reported is still more than double the number reported for 1926, and is considerably higher than the number reported for 1927. All but three of the States which had reported more than 10 cases during the four weeks ended June 2 showed definite decreases. In Michigan the number of cases increased from 23 to 28; in New York from 115 to 124; in Pennsylvania from 115 to 124.

Measles.—The number of cases of measles reported by 38 States and the District of Columbia for the two weeks ended June 30 was 17,300, which is approximately 4,600 less than the number reported for the preceding two weeks. The decline was widespread, practically every State showing a definite decline. In Michigan the number of cases dropped from 2,011 to 1,364; in New Jersey from 2,960 to 1,784; in New York from 7,500 to 4,100. The incidence of the disease still continued more prevalent during the current year than it was in 1927, but the reported number of cases is considerably less than the number reported in 1926 during this season of the year.

Scarlet fever.—A normal seasonal decline in scarlet fever continued through the month of June. There were 8,800 cases reported by 41 States and the District of Columbia for the four-week period ended June 30, a decline of more than 40 per cent from the number for the preceding four-week period. This is approximately 1,500 fewer cases than were reported for this period in 1927 and 1,900 less than

reported in 1926. In a few of the States a decline was not apparent, but for most of them the reports showed a very definite decrease in the number of cases. In California the cases dropped from 606 to 463; in Colorado from 214 to 82; in Illinois from 1,014 to 780; in Kansas from 465 to 180; in New Jersey from 844 to 534; in New York from 2,209 to 1,295; in Pennsylvania from 1,573 to 1,019; and in Wisconsin from 860 to 465. The prevalence of the disease may be expected to continue to decline through July and August.

Diphtheria.—Very little change in the incidence of diphtheria occurred during June, but the general trend is still downward. Approximately 5,000 cases were reported in the four weeks ended June 30 by 42 States and the District of Columbia, which is 700 fewer than were reported by those States in the corresponding weeks of 1927 and 300 more than were reported in the corresponding weeks of 1926. Some further decline may be expected, as the seasonal minimum normally occurs in August.

Foreign Countries ²

The general prevalence of certain epidemic diseases in most foreign countries during April and May is summarized below.

Plague.—The plague epidemic at Aden apparently came to an end with the onset of warm weather, the last case having been reported during the week ended May 26. The total number of cases since the beginning of the epidemic is 1,430, and of deaths, 1,057. The strikingly high case fatality rate of 74 per cent is probably due to unreported cases. According to the statement of the health officer of Aden, many cases were unreported until the patient was moribund or dead.

In Iraq the only locality affected was Baghdad, but only 34 cases and 18 deaths had been reported up to June 9.

The plague outbreak at Suez apparently has ended, no cases having occurred since June 1. Numerous cases have occurred in upper Egypt, with a very low case fatality.

Four cases occurred in Greece at Corfu, the first cases this year. In Algeria there were two cases in the first part of June at Oran.

In India the center of plague prevalence has been in the United Provinces, where 66 per cent of the total plague mortality of India occurred. The mortality from the disease has been higher in 1928 than in any previous year since 1917. On the other hand, the plague situation in the Punjab has been unusually favorable. The situation in the western part of the United Provinces had materially improved, but the prevalence of the disease in the northwestern section continued serious. The plague situation was improving in Madagascar,

² Data from the Monthly Epidemiological Report of the health section of the League of Nations' secretariat, June 15, 1928, supplemented by information published in the Public Health Reports.

but the contrary was true in Nigeria and Senegal. In the Argentine plague was somewhat more in evidence in May and June than earlier in the year. Six fatal cases of pneumonic plague are said to have occurred at Buenos Aires between May 8 and 16.

Cholera.—At the beginning of May cholera was reported to be more prevalent in India than at the corresponding date of any of the previous eight years, with the exception of 1924. This increase apparently has been confined to the Ganges Valley, 2,614 deaths having been reported for one week (the week ended May 5) in Bihar and 1,153 deaths in the United Provinces.

Yellow fever.—The League of Nations' Monthly Epidemiological Report for June 15 makes the following comment:

After some months' absence, yellow fever has reappeared in West Africa. Two cases occurred on June 3 at Matadi in Belgian Congo, where there had been no case since February 24. There were three cases in a village about 4 miles north of Grand Popo in Dahomey on June 10 and 11. In May there was a case of laboratory infection at Accra.

Yellow fever has also made its appearance in Brazil,³ one case being reported in Pernambuco on June 9. On June 4 the disease appeared at Rio de Janeiro, where 12 cases were reported up to June 12.

Smallpox.—In England and Wales the smallpox situation, which, up to the end of April, had shown improvement over 1927, was apparently worse. During the four weeks ended June 9, 1928, 1,245 cases were reported, as compared with 1,076 and 776 cases during the corresponding periods of 1927 and 1926, respectively. In Italy an increase occurred in smallpox prevalence during the first quarter as compared with the corresponding period last year, but the number of cases was lower in comparison with earlier years. In France, where the prevalence of the disease had been relatively high during the past two years, only six cases were reported during April. Decreases in the smallpox prevalence are reported for Greece and Russia. It is stated that smallpox in Russia is now very largely a rural disease, many large towns having been entirely free from it in the last two years. This is apparently due to a more rigid enforcement of the vaccination law of 1924 in the urban districts.

Scarlet fever.—The incidence of scarlet fever, it is stated by the Epidemiological Report, was higher last winter and spring than in the corresponding period of the preceding year in most countries in the western half of Europe. In the eastern part of Europe a decrease was evident. The greatest increase this year was in Germany, where nearly 48,000 cases were reported during the first 20 weeks as compared with 31,000 and 16,000 cases during the corresponding weeks of 1927 and 1926, respectively. None of the increases in the western European countries assumed epidemic proportions.

³ For later reports see Public Health Reports for July 20, 1928, p. 1937.

Diphtheria.—An increase in diphtheria prevalence is reported in most European countries, but the case fatality rate decreased in some countries (Germany, Denmark, and New Zealand). This increase in diphtheria prevalence is synchronous with the situation in the United States.

CURRENT STATE MORTALITY STATISTICS

For the information of public health officials and others interested, the data in the following tables have been compiled from the monthly mortality reports of State health departments for the latest month for which published records are available. Statistics of most communicable diseases are not included, since they are available in other tabulations in the Public Health Reports. Statistics of deaths from other causes are limited for the most part to those causes which appear in the State reports. In the case of States which publish detailed mortality reports each month, the record of only the principal groups of causes and certain important specific causes have been used.

For purposes of comparison, the mortality records for a few preceding years are given, the rates being for the month corresponding to the last month for which the 1928 rate is available.

These tabulations will be enlarged as the current data on mortality from additional States become available.

Monthly State mortality statistics

(All rates are on an annual basis, and, with the exception of mortality from all causes and infant mortality, are per 100,000)

	1928				Corresponding month for—			
	Jan.	Feb.	Mar.	Apr.	1927	1926	1925	1924

ALL CAUSES: ANNUAL RATE PER 1,000

Alabama:								
White.....	10.4	10.1	10.7	9.5	8.5	10.3	-----	-----
Colored.....	14.6	17.3	17.7	17.6	14.6	17.5	-----	-----
Connecticut.....	11.7	12.0	12.0	12.5	11.7	14.5	12.9	12.1
Indiana.....	12.4	11.7	13.6	13.6	12.3	14.7	13.5	13.0
Iowa.....	10.2	10.2	12.1	11.2	-----	-----	-----	-----
Kansas.....	10.9	11.7	13.8	-----	-----	-----	-----	-----
Minnesota.....	9.5	9.6	9.6	10.6	-----	-----	-----	-----
New Jersey.....	11.3	12.4	13.3	13.8	12.8	14.2	12.8	13.1
New York.....	13.6	14.2	14.4	14.4	13.8	16.3	16.3	15.8
Oklahoma.....	10.5	-----	-----	-----	-----	-----	-----	-----
Pennsylvania.....	12.4	13.3	13.8	13.7	13.2	15.7	13.8	14.4
Tennessee.....	11.8	12.9	12.3	12.6	11.8	-----	-----	-----

INFANT MORTALITY: RATE PER 1,000 LIVE BIRTHS

Alabama:								
White.....	80.3	78.4	77.6	58.9	50.4	61.5	-----	-----
Colored.....	128.2	118.0	108.5	100.1	87.6	96.6	-----	-----
Connecticut.....	68.4	55.7	65.7	82.5	63.1	83.5	78.0	63.8
Indiana.....	68.7	59.8	67.9	75.2	57.9	89.3	70.3	84.3
Iowa.....	75.3	52.7	66.4	57.8	-----	-----	-----	-----
Kansas.....	70.0	57.7	73.7	-----	-----	-----	-----	-----
New York.....	68.0	72.0	73.0	75.0	73.0	88.0	84.0	88.0
Oklahoma.....	86.2	-----	-----	-----	-----	-----	-----	-----
Pennsylvania.....	70.6	81.0	83.0	84.0	75.0	104.0	80.4	-----

Monthly State mortality statistics—Continued

(All rates are on an annual basis, and, with the exception of mortality from all causes and infant mortality, are per 100,000)

	1923				Corresponding month for—			
	Jan.	Feb.	Mar.	Apr.	1927	1926	1925	1924
INFLUENZA (11)								
Alabama:								
White.....	89.1	83.9	98.8	78.9	37.7	98.5		
Colored.....	86.0	112.8	124.0	107.7	77.5	137.2		
Connecticut.....	28.5	25.8	19.7	39.4	35.3	131.1	56.5	36.4
Indiana.....	48.1	44.0	69.3	82.0	36.7	119.2	101.0	35.7
Iowa.....	32.5	35.8	79.5	87.2				
Kansas.....	53.3	85.7	139.9					
Minnesota.....	21.2	22.7	29.8	58.1				
New Jersey.....	12.6	16.1	24.7	28.0	23.0	48.3	18.6	14.2
New York.....	20.0	20.7	25.3	27.0	20.6	70.8	32.6	18.4
North Carolina.....			63.7					
Oklahoma.....	21.8							
Pennsylvania.....	37.3	38.2	51.3	47.1	43.9	142.0	63.2	54.0
South Carolina.....	49.9	81.7	132.6	50.9	33.0			
Tennessee.....	77.2	89.5	88.5	112.3	62.2			

TUBERCULOSIS, ALL FORMS (31-37)

Alabama:								
White.....	58.1	53.9	57.5	48.5	55.0	53.5		
Colored.....	136.9	179.1	162.2	184.0	189.0	209.2		
Connecticut.....	63.5	75.1	83.9	77.6	76.7	91.3	89.1	84.2
Indiana.....	67.8	67.4	88.2	76.2	83.4	97.0	90.0	83.3
Iowa.....	32.0	32.1	38.8	36.6				
Kansas.....	29.5	52.8	49.4					
Minnesota.....	51.5	64.7	60.1	55.0				
New Jersey.....	65.0	70.8	78.9	83.1	87.6	88.3	86.2	95.3
New York.....	66.5	82.1	82.5	88.5	92.3	101.1	111.3	113.8
North Carolina.....			86.6					
Oklahoma.....	59.7							
Pennsylvania.....	64.7	78.5	78.4	81.9	87.1	92.7	91.8	99.8
South Carolina.....	72.6	74.9	87.2	86.8	84.4			
Tennessee.....	121.9	150.9	140.7	159.5	173.8			

CANCER, ALL FORMS (43-49)

Alabama:								
White.....	46.8	36.0	44.9	49.2	40.7	52.7		
Colored.....	41.2	39.5	48.8	36.8	50.3	39.4		
Connecticut.....	113.8	106.6	105.8	102.5	92.8	103.0	104.2	99.6
Indiana.....	99.3	87.6	117.1	105.3	98.5	102.8	101.0	90.9
Iowa.....	103.8	91.2	121.2	104.2				
Kansas.....	95.6	107.0	104.6					
Minnesota.....	112.0	94.8	115.1	93.0				
New Jersey.....	99.2	102.4	107.9	104.4	99.6	98.2	102.7	95.3
New York.....	127.5	121.2	128.6	122.0	128.6	116.6	137.8	123.0
Oklahoma.....	58.7							
Pennsylvania.....	95.5	102.0	95.4	102.0	98.1	99.0	95.7	96.5
South Carolina.....	30.3	39.2	51.2	34.6	35.0			
Tennessee.....	58.8	51.3	53.2	67.6	49.9			

DIABETES (57)

Alabama:								
White.....	12.8	6.0	9.8	8.0	9.0	4.6		
Colored.....	14.5	14.1	18.5	9.5	6.8	2.7		
Connecticut.....			21.9	19.6				
Iowa.....	15.5	24.4	19.9	25.6				
Kansas.....	24.4	17.1	28.9					
Minnesota.....	19.9	19.4	24.7	21.0				
New Jersey.....	27.6	27.2	27.4	26.3	24.1	26.8	30.8	23.6
Oklahoma.....	12.6							
Pennsylvania.....	21.7	23.5	27.8	25.3	23.2	24.7	18.1	17.5
South Carolina.....	12.6	13.5	11.4	3.3	3.3			

Monthly State mortality statistics—Continued

(All rates are on an annual basis, and, with the exception of mortality from all causes and infant mortality, are per 100,000)

	1928				Corresponding month for—			
	Jan.	Feb.	Mar.	Apr.	1927	1926	1925	1924
DISEASES OF THE NERVOUS SYSTEM AND OF THE ORGANS OF SPECIAL SENSE (70-86)								
Iowa.....	125.6	145.1	153.2	145.8	-----	-----	-----	-----
Kansas.....	146.9	145.4	173.2	-----	-----	-----	-----	-----
New Jersey.....	112.5	120.9	126.3	139.5	129.5	147.8	136.9	140.9
New York.....	169.1	169.8	176.1	172.7	153.0	184.0	207.3	195.5
Oklahoma.....	114.5	-----	-----	-----	-----	-----	-----	-----

CEREBRAL HEMORRHAGE, APOPLEXY (74)

Alabama:								
White.....	42.3	47.2	57.5	48.5	40.7	57.3	-----	-----
Colored.....	58.1	84.6	87.1	85.9	48.9	62.5	-----	-----
Indiana.....	121.5	122.5	(¹)	134.1	115.9	116.8	104.2	-----
Iowa.....	97.0	108.3	111.5	102.2	-----	-----	-----	-----
Kansas.....	114.2	104.3	141.8	-----	-----	-----	-----	-----
New York.....	121.0	131.8	134.7	135.3	115.3	138.0	154.0	152.1
Oklahoma.....	63.6	-----	-----	-----	-----	-----	-----	-----
Pennsylvania.....	100.0	101.0	97.2	101.0	-----	-----	-----	-----

DISEASES OF THE CIRCULATORY SYSTEM (87-96)

Iowa.....	242.0	253.0	310.8	249.0	-----	-----	-----	-----
Kansas.....	213.7	210.6	250.9	-----	-----	-----	-----	-----
New Jersey.....	272.7	272.4	281.6	306.6	264.5	274.7	244.7	237.3
New York.....	375.0	399.7	369.1	387.7	342.7	408.0	392.3	361.4
Oklahoma.....	90.8	-----	-----	-----	-----	-----	-----	-----
South Carolina.....	220.5	278.2	277.9	263.7	277.0	-----	-----	-----

DISEASES OF THE HEART (87-90)

Alabama:								
White.....	114.7	116.9	96.0	98.5	91.9	103.1	-----	-----
Colored.....	124.8	150.9	189.9	199.0	119.6	142.6	-----	-----
Connecticut.....	168.5	200.3	198.4	196.8	180.2	198.2	170.2	166.0
Indiana.....	¹ 198.5	¹ 153.1	¹ 188.0	194.6	173.8	181.1	172.6	(¹)
Iowa.....	217.3	225.5	279.8	222.0	-----	-----	-----	-----
Kansas.....	181.6	183.8	215.6	-----	-----	-----	-----	-----
Minnesota.....	156.2	165.5	160.9	125.6	-----	-----	-----	-----
New York.....	328.3	345.5	323.7	342.7	301.3	356.3	338.6	306.5
Oklahoma.....	82.0	-----	-----	-----	-----	-----	-----	-----
Pennsylvania.....	246.0	256.0	272.0	249.0	254.0	254.0	177.0	-----
Tennessee.....	105.9	137.3	101.9	133.2	-----	-----	-----	-----

PNEUMONIA, ALL FORMS (100, 101)

Alabama:								
White.....	167.6	144.6	162.6	120.2	57.2	102.3	-----	-----
Colored.....	191.4	200.2	203.1	170.4	115.6	163.0	-----	-----
Connecticut.....	140.8	148.6	151.7	165.1	125.8	205.2	141.6	118.2
Indiana.....	137.0	120.1	151.3	173.2	99.3	161.6	135.6	154.4
Iowa.....	109.6	91.8	98.4	92.2	-----	-----	-----	-----
Kansas.....	105.9	104.9	56.5	-----	-----	-----	-----	-----
Minnesota.....	80.5	77.7	87.4	102.4	-----	-----	-----	-----
New Jersey.....	80.4	108.7	111.2	104.1	87.9	122.7	97.0	98.8
New York.....	120.4	131.3	152.8	152.9	128.0	180.6	167.2	145.6
North Carolina.....	-----	-----	168.7	-----	-----	-----	-----	-----
Oklahoma.....	188.0	-----	-----	-----	-----	-----	-----	-----
Pennsylvania.....	131.0	154.0	191.5	166.0	139.0	222.0	175.0	221.0
South Carolina.....	178.1	155.3	161.7	124.7	127.9	-----	-----	-----
Tennessee.....	163.8	163.0	162.8	116.7	99.4	-----	-----	-----

¹ Not available.¹ Reported as organic heart.

Monthly State mortality statistics—Continued

(All rates are on an annual basis, and, with the exception of mortality from all causes and infant mortality, are per 100,000)

	1928				Corresponding month for—			
	Jan.	Feb.	Mar.	Apr.	1927	1926	1925	1924
DISEASES OF THE DIGESTIVE SYSTEM (108-127)								
Iowa.....	62.6	62.2	65.5	55.6	-----	-----	-----	-----
Kansas.....	62.9	66.4	78.3	-----	-----	-----	-----	-----
New Jersey.....	147.5	158.0	160.4	172.9	165.9	167.4	161.2	173.6
New York.....	69.0	86.2	79.8	72.6	75.1	71.9	96.0	97.9
Oklahoma.....	62.1	-----	-----	-----	-----	-----	-----	-----

DIARRHEA AND ENTERITIS UNDER 2 YEARS (113)

Alabama:								
White.....	11.3	6.0	5.6	10.9	24.9	9.2	-----	-----
Colored.....	4.8	9.9	9.2	21.8	24.5	9.5	-----	-----
Connecticut.....	9.5	4.8	3.6	6.0	6.1	7.0	9.5	6.5
Indiana.....	7.0	10.7	9.3	6.1	7.7	10.5	9.4	10.3
Iowa.....	3.4	1.0	5.8	3.5	-----	-----	-----	-----
Kansas.....	7.7	5.5	9.6	-----	-----	-----	-----	-----
Minnesota.....	10.4	8.9	10.8	8.0	-----	-----	-----	-----
New Jersey.....	9.6	10.5	10.2	12.7	12.0	12.6	18.6	22.5
New York.....	10.9	11.5	10.3	12.4	12.0	14.4	18.8	22.8
North Carolina.....	-----	-----	10.0	-----	-----	-----	-----	-----
Oklahoma.....	11.2	-----	-----	-----	-----	-----	-----	-----
Pennsylvania.....	16.7	19.0	16.1	16.4	16.2	22.6	19.3	25.4
South Carolina.....	3.8	8.8	8.2	5.9	29.0	-----	-----	-----
Tennessee.....	4.7	3.5	4.7	3.4	10.8	-----	-----	-----

NEPHRITIS (128, 129)

Alabama:								
White.....	74.7	66.7	75.7	73.9	61.8	86.3	-----	-----
Colored.....	92.1	90.2	91.0	111.8	99.3	103.2	-----	-----
Connecticut.....	-----	-----	71.5	73.1	-----	-----	-----	-----
Indiana.....	70.4	86.8	85.6	90.0	77.2	93.5	94.7	-----
Iowa.....	62.6	54.4	53.8	52.6	-----	-----	-----	-----
Kansas.....	85.3	96.7	112.9	-----	-----	-----	-----	-----
Minnesota.....	66.2	62.4	54.5	61.7	-----	-----	-----	-----
New Jersey.....	108.5	118.6	124.8	108.6	102.6	121.7	113.2	116.4
New York.....	121.8	117.6	120.0	127.0	124.2	151.1	123.0	135.5
Oklahoma.....	64.1	-----	-----	-----	-----	-----	-----	-----
Pennsylvania.....	117.0	122.0	115.0	122.0	114.0	123.0	112.0	116.6
South Carolina.....	83.4	99.9	108.6	105.7	83.1	-----	-----	-----

PUERPERAL STATE (143-150)

Alabama:								
White.....	-----	21.0	28.3	18.1	15.1	17.6	-----	-----
Colored.....	-----	16.9	25.1	31.3	50.3	35.3	-----	-----
Connecticut.....	10 9.5	10 8.9	10 13.1	10 21.1	10 13.0	10 8.6	10 8.7	10 12.1
Indiana.....	11 11.9	11 8.7	11 11.5	11 9.2	11 13.9	11 19.5	11 14.9	11 7.9
Iowa.....	6.8	11.9	11.2	15.0	-----	-----	-----	-----
Kansas.....	7.1	21.3	17.3	-----	-----	-----	-----	-----
Minnesota.....	9.5	10.2	14.3	13.0	-----	-----	-----	-----
New York.....	10.9	13.3	12.0	15.2	13.1	14.0	14.3	13.3
Oklahoma.....	11.6	-----	-----	-----	-----	-----	-----	-----
Pennsylvania.....	19 5.3	19 5.3	19 6.6	19 6.7	19 6.8	19 7.1	19 7.1	-----
Tennessee.....	19 6.1	19 4.5	19 7.1	19 5.3	19 6.9	-----	-----	-----

¹ Infantile diarrhea excepted.

² Reported as diarrhea of children.

³ Reported as infantile diarrhea.

⁴ Reported as intestinal diseases of children under 1 year.

⁵ Reported as chronic nephritis.

⁶ Reported as Bright's disease.

⁷ Reported as nephritis.

⁸ Reported as kidney diseases.

⁹ Puerperal state.

¹⁰ Reported as puerperal diseases.

¹¹ Reported as puerperal septicemia.

¹² Rate per 1,000 total births.

Monthly State mortality statistics—Continued

(All rates are on an annual basis, and, with the exception of mortality from all causes and infant mortality, are per 100,000)

	1928				Corresponding month for—			
	Jan.	Feb.	Mar.	Apr.	1927	1926	1925	1924
CONGENITAL MALFORMATION AND DISEASES OF EARLY INFANCY (159-163)								
Alabama:								
White.....	67.2	70.4	69.4	57.9	78.3	81.0		
Colored.....	69.0	98.7	92.3	80.4	96.5	78.8		
Iowa.....	58.7	48.2	61.1	66.6				
Kansas.....	53.9	59.0	65.4					
New York.....	65.2	70.2	69.4	66.5	76.8	83.7	90.0	92.6
Oklahoma.....	86.9							
Pennsylvania.....	134.9	137.6	135.1	137.4	37.3	36.4	36.9	

AUTOMOBILE ACCIDENTS (488c)

Alabama:								
White.....	14.3	14.2	15.4	11.6	12.0	6.9		
Colored.....	10.9	7.0	13.2	6.8	8.2	10.9		
Iowa.....	10.2	9.3	12.1	10.0				
Kansas.....	10.9	9.6	8.3					
Minnesota.....	8.7	8.3	5.6	9.4				
New Jersey.....	12.9	17.1	28.0	21.7	24.0	18.5		
New York.....	17.0	15.3	15.4	17.8	17.0	15.1	16.5	17.3
North Carolina.....			8.8					
Oklahoma.....	8.7							
Pennsylvania.....	13.5	12.2	11.8	14.8	17.3	17.2	16.0	12.4
South Carolina.....	11.4	10.8	11.4	7.8	9.9			
Tennessee.....	13.2	10.6	9.4	10.7	11.8			

† Rate per 1,000 live births.

DEATH RATES IN A GROUP OF INSURED PERSONS

Rates for Principal Causes of Death for May, 1928

The statements below and the accompanying table are taken from the Statistical Bulletin for June, 1928, issued by the Metropolitan Life Insurance Co. The table presents the mortality record of the industrial insurance department of the company, by principal causes of death, for May, 1928, as compared with April and with May of 1927. The rates are based on a strength of more than 18,000,000 insured persons in the United States and Canada.

The death rate for May in this group of insured persons, 10.4 per 1,000, is not only 20 per cent higher than the rate for May of last year, but is the highest rate recorded for any month so far this year, the rates being as follows: January, 9.4; February, 9.4; March, 10.3; April, 9.9. In normal years the months of the first quarter record the highest death rates, the peak usually coming in March.

With reference to the diseases contributing to this unusual condition, the Bulletin states:

Influenza, for which the death rate up to the end of March had run below last year's figure, showed a considerable rise in April, with a further increase in May to a figure more than double that for the same month in 1927. The pneumonia

death rate in May was 57 per cent higher than that for the corresponding month of last year. The most pronounced rises, as compared with May of last year, were for these diseases, which are always adversely affected by a combination of low temperature and high humidity. The three principal degenerative diseases (heart disease, cerebral hemorrhage, and chronic nephritis) always cause more deaths when the mortality from pneumonia is rising; and all three show May death rates in excess of those for either April of this year or May of last. Even tuberculosis, which had shown very marked improvement during the four preceding months of 1928, registered a death rate of 105 per 100,000, as compared with 96.4 in May, 1927.

The May death rate for measles (12.1 per 100,000) was unusually high, and the cumulative rate for this disease up to June 9 was almost double that for the corresponding period of last year. The diphtheria death rate showed improvement over the same month of 1927, but the year-to-date figure for this disease stands slightly higher than that for last year, and also exceeds that for the corresponding part of 1926.

The mortality from diabetes registered an increase over that for May a year ago; and, unless there is marked improvement in the latter half of 1928, this disease will record its highest death rate over a long series of years.

Suicides were considerably more numerous than in May of 1926 and 1927. Fatal accidents also increased and the automobile accident death rate was 21.5 per cent above that for May, 1927.

Death rates (annual basis) per 100,000, for principal causes of death

[Industrial department, Metropolitan Life Insurance Co.]

Cause of death	Rate per 100,000 lives exposed ¹			
	May, 1928	Apr., 1928	May, 1927	Year 1927 ²
Total, all causes.....	1,038.1	996.9	874.8	885.4
Typhoid fever.....	2.0	1.4	5.2	4.6
Measles.....	12.1	10.2	7.5	4.1
Scarlet fever.....	2.1	4.4	2.5	3.1
Whooping cough.....	6.9	6.1	6.5	6.4
Diphtheria.....	9.1	9.3	10.6	10.5
Influenza.....	38.6	35.4	18.7	17.7
Tuberculosis (all forms).....	105.0	94.8	96.4	92.2
Tuberculosis of respiratory system.....	92.5	83.8	81.5	81.7
Cancer.....	74.6	75.0	65.4	74.0
Diabetes mellitus.....	19.8	18.0	16.0	16.7
Cerebral hemorrhage.....	62.2	59.5	49.3	54.9
Organic diseases of heart.....	150.3	151.8	130.8	132.2
Pneumonia (all forms).....	132.5	140.6	94.3	77.6
Other respiratory diseases.....	22.8	19.3	16.3	15.4
Diarrhea and enteritis.....	15.4	15.3	17.7	24.5
Bright's disease (chronic nephritis).....	75.8	74.5	70.1	69.3
Puerperal state.....	14.5	15.2	14.7	15.4
Suicides.....	9.1	8.2	7.6	8.3
Homicides.....	7.6	5.6	7.6	7.2
Other external causes (excluding suicides and homicides).....	56.9	52.4	53.6	63.7
Traumatism by automobiles.....	15.8	15.3	13.0	18.3
All other causes.....	210.8	198.4	190.8	196.7

¹ All figures include infants insured under 1 year of age.

² Based on provisional estimate of lives exposed to risk in 1927.

MEDICAL ENTOMOLOGY AT THE FOURTH ENTOMOLOGICAL CONGRESS

At the Fourth International Congress of Entomology, to be held at Cornell University, Ithaca, N. Y., August 12-18, 1928, there will be presented several papers relating to medical entomology which will no doubt be of considerable interest to health authorities and sanitarians. The following brief list notes some of the papers to be given by the section on medical and veterinary entomology:

- Klima und Seuchen von Standpunkt des Entomologen. By Dr. E. Martini, Institut des Schiffs- und Tropenkrankheiten, Hamburg, Germany.
- Arthropods as intermediate hosts of helminths. By Dr. M. C. Hall, chief in zoology, United States Bureau of Animal Industry.
- Arthropods in the transmission of tularaemia. By Dr. Edward Francis, surgeon, United States Public Health Service.
- Rocky Mountain spotted fever. By Dr. R. R. Parker, special expert, United States Public Health Service.
- Some factors governing the growth and development of mosquito larvae. By Dr. M. E. MacGregor, Wellcome Bureau of Scientific Research, London, England.
- Environmental factors and mosquito breeding. By Dr. Willem Rudolfs, professor of water supplies, Rutgers University.
- Anopheline investigations in California. By Dr. W. B. Herms, professor of parasitology, University of California.
- On the development of malaria parasites in the mosquito host (illustrated). By Dr. W. V. King, United States Bureau of Entomology.

COURT DECISIONS RELATING TO PUBLIC HEALTH

Disposal of garbage by city held governmental function.—(Michigan Supreme Court; *Curry v. City of Highland Park et al.*, 219 N. W. 745; decided June 4, 1928.) In a suit for specific performance involving the sale of certain land, owned by the city of Highland Park and used principally for the disposal of the garbage of the city, the question was presented as to whether the said property was used in the discharge of a governmental function. The supreme court held that the disposal of garbage by the city was a governmental function, saying:

* * * The matter of public health is not local; it concerns the State. In matters relating to public health, the city acts as an arm of the State, and the property whose use is devoted to the public health is used in the discharge of a governmental function. * * *

Ordinance licensing and regulating business of manufacturing confectioners upheld.—(Illinois Supreme Court; *Crackerjack Co. et al. v. City of Chicago*, 161 N. E. 479; decided April 21, 1928.) An ordinance of the city of Chicago required a license for the conduct of the business of a manufacturing confectioner, required inspection of the

premises of a proposed licensee by the commissioner of health, provided a graded license fee based on the floor area devoted to manufacturing and storage purposes, and set forth sanitary requirements governing such establishments. The plaintiffs, manufacturing confectioners, sought to enjoin the enforcement of the said ordinance, charging that the business of a manufacturing confectioner was not a business requiring regulation for the sake of the public health and that said ordinance was invalid, unconstitutional, and void. They contended that the city did not have the power to regulate or license their business. The city contended that it had authority to license the business of plaintiffs as an incident to regulation, and that such business, if not properly safeguarded, was one tending to injure the public health by the use of deleterious ingredients in the manufacture of confectionery and by uncleanly environment. A State statute gave cities the power to pass and enforce all necessary police ordinances and to do all acts and make all regulations which might be necessary or expedient for the promotion of health or the suppression of disease. Other clauses of said law designated certain articles of food "and other provisions" as subjects of regulation and inspection by cities. The supreme court affirmed a decree in favor of the city, holding that the ordinance in question was "a valid police regulation and within the competence of the city to enact."

PUBLIC HEALTH ENGINEERING ABSTRACTS

Automotive Phases of Carbon Monoxide Research Summarized. Anon. *Society of Automotive Engineers Journal*, vol. 22, No. 5, May, 1928, pp. 570-584. (Abstract by Leonard Greenburg.)

This valuable report discusses the carbon-monoxide hazard and the research on this problem under six headings: (a) General research on carbon monoxide; (b) the carbon monoxide content of air in garages, streets, and tunnels, due to the exhaust gases from automobiles; (c) the physiological effect of carbon monoxide; (d) the chemical aspects of the use of ozone in meeting carbon monoxide health hazards; (e) the physiological effects of ozone in ventilation; (f) studies of the use of ozone in garage ventilation. It is impossible to give a brief summary of the findings of this report, for the report itself is a summary of a vast amount of material and of a bibliography comprising 282 titles.

Briefly, it may be pointed out that the methods of detecting and obviating the carbon-monoxide hazard are discussed. The amount of carbon monoxide produced by automobiles is obtained from the studies of the New York and New Jersey State Bridge and Tunnel Commission. For the conditions in public garages, three studies are cited. The United States Bureau of Mines studies in private garages are quoted, as well as the studies of Doctors Henderson and Haggard made in a private garage. With reference to the problem of exhaust gas in city streets, the results of the study of Doctors Henderson and Haggard, as well as that of Mr. Bloomfield, are quoted in detail. The physiological effects of small concentrations of carbon monoxide, based largely on the work of Haldane and the New York and New Jersey State Bridge and Tunnel Commission, are discussed. The findings of the New York Academy of Medicine are quoted,

the main conclusion of which is that there still remains considerable to learn about carbon monoxide and its effect in low concentrations, and from the practical viewpoint there is need of effective safeguarding the health of those exposed to the dangers of carbon monoxide in industry by State and municipal authorities.

The report concludes with a very lengthy discussion of ozone and its effect on carbon monoxide. The research evidence appears to indicate that ozone does not, under ordinary conditions, combine with carbon monoxide rapidly enough to be of any value, and yet reports from employees and proprietors of garages still seem to indicate that ozone is of some value in the elimination of carbon monoxide. The value of adequate ventilation is emphasized as being superior to the use of ozone for the removal of carbon monoxide.

An excellent bibliography is presented, covering many phases of the problem of carbon-monoxide poisoning.

New Rapid Sand Filter Plant, Washington, D. C. Philip O. MacQueen. *Journal of the American Water Works Association*, vol. 19, No. 5, May, 1928, pp. 483-502. (Abstract by H. F. Ferguson.)

Treatment process comprises coagulation, sedimentation, filtration, and chlorination. Capacity of plant is 80,000,000 gallons per day. The two mixing basins are designed to give retention of from 8 to 27 minutes and velocities between 1 and 2 feet per second. The two settling basins will be operated normally in parallel and give a three-hour settling period and a velocity of 3 feet per minute. The 20 filters are designed as 4,000,000 gallon per day units with vertical rise of wash water of 2 feet per minute and have 20 inches of gravel, 24 inches of sand, and an open wooden flat type strainer system. Filtered water reservoir capacity is 15,000,000 gallons. Economy, flexibility, and compactness were important design factors. Mixing and settling basin and central control chamber design make operation exceptionally flexible. The plant is so located that water power is available for a hydroelectric plant which furnishes all power used at the plant.

Filteration Improvements and Economics with Prechlorination. J. S. Whitener, *Journal North Carolina Section American Water Works Association*, 1927, vol. 5, No. 1, pp. 101-103. (Abstract by A. I. Howd.)

This paper deals with the author's experience in the chlorination of coagulated water at the Raleigh (N. C.) water filtration plant. He found that prechlorination of the coagulated water—(1) Eliminated all fermentation in lactose broth of filtered samples; (2) caused the filters to produce a clear, sparkling effluent at all times; (3) caused all cracks to disappear from the tops of the filter beds; and (4) excepting when *Cyclops* are exceedingly numerous in the water, the filter runs have, during periods of high raw water turbidity, been doubled, and during periods of low raw water turbidity, have been increased by one third."

Sanitary Defects in Water Systems. M. Z. Bair. *Water Works*, vol. 67, No. 4, April, 1928, p. 166. (Abstract by R. J. Faust.)

The more common sanitary defects in a water system are brought to our attention by this article. They are—(1) Contamination of well water resulting from leaks in casings near the ground surface; (2) by-passes or cross connections in water-purification plants between raw and treated water; (3) emergency intakes from a polluted water supply for fire protection; (4) neglecting to sterilize newly laid water mains; and (5) cross connections between a safe water supply and a questionable supply.

Short discussions follow each sanitary defect mentioned.

Cleansing Work in the Borough of Blackburn. J. Eccleston, *The Surveyor*, vol. 73, No. 1894. May 11, 1928, pp. 519-520. (Abstract by F. E. DeMartini.)

This article deals with collection and disposal of house refuse, trade refuse, street cleaning, conversion of privies to water-closets, and replacement of ash pits and ash tubs with ash bins, in Blackburn, England.

Light, horse-drawn lorries are used, with two collectors and one driver, which average four collections per day. A motor truck is used for the outlying districts. Wastes and refuse are disposed of by incineration at two plants. A dust extractor was installed at the central plant with the following results: Abatement of the dust nuisance and complaints, improvement in evaporation of the boilers, an increase of 30 per cent in the effective capacity of the furnaces, and economy in the use of fuel. The clinker from the incinerators is used in trickling filters at sewage-disposal plants, and a possible future use as fuel for steam-making in manufacturing plants is contemplated. The dust is disposed of on clayey land to break it up. The saving effected by conversion of privies to water-closets will more than pay the interest and sinking fund on the loan made for this purpose.

Refuse Disposal in Providence. David D. Bouchard. *Public Works*, vol. 59, No. 4, April, 1928, pp. 137-138. (Abstract by L. M. Fisher.)

At Providence, a city of 270,000, the garbage was collected by private companies and individuals and fed to hogs prior to November 1, 1927.

Lack of suitable sites, complaints from suburban towns and villages through which the garbage had to be hauled, and the fear that injunctions would be obtained against hog farms led to the construction of a two-unit 160-ton Decarie incinerator, $1\frac{1}{2}$ miles from the center of the city, in the manufacturing district, at a cost of \$352,500.

Only garbage, which must be wrapped, and combustible material, which must be tied, is collected. Ashes are not collected. Collections are made by means of $2\frac{1}{2}$ ton trucks, each carrying 2, 1, and $\frac{1}{4}$ ton removable tanks and operating over 14 routes. A driver, who does no collecting, and three other men accompany each truck.

Careful records are kept and costs are charged against administration, collection, or incineration. Under the old system the annual cost was \$125,000 yearly. The new method will cost approximately \$225,000.

Treatment of Vegetable Refuse: A New Process. Anon. *The Surveyor*, vol. 73, No. 1885, Mar. 9, 1928, p. 297. (Abstract by W. M. Olson.)

Incoming vegetable matter is first pulverized; the pulped mass is delivered continuously to a separator where heavy foreign matter, such as glass, settles out in agitated water. The vegetable matter is then drained on moving copper gauze which conveys it to heavy rollers for complete crushing. A second pair of rollers removes the free water, leaving the material comparatively dry. A readily salable and hygienic product forming a valuable addition to agricultural economics is produced.

Industrial Waste Work of the Sanitary District of Chicago. F. W. Mohlman. *Water Works*, vol. 67, No. 4, April, 1928, pp. 163-166. (Abstract by R. J. Faust.)

This article sums up the results and recommendations of studies and tests made on the three major industrial wastes produced in the sanitary district. These wastes are classified as packing-house, tannery, and corn products. Chemical industrial wastes from the Sherwin-Williams Paint Co. are discussed also.

The stockyards testing station was operated from 1912 to 1918. Studies were made of fine screening, sedimentation, chemical precipitation, trickling filters, and activated sludge. Best results were obtained by activated sludge treatment. An aeration period of 9 hours and 3.5 cubic feet of air per gallon were required. Activated sludge was filter-pressed in a recessed-plate press.

The tannery testing station was built in 1920 and had been in operation several years. It included tanks and filters for studying fine screening, sedimentation, activated sludge treatment, cinder and sand filters, and filter pressing of sludge. Results tend to show that biological treatment would be uneconomical and inadvisable for the 30 tanneries on the North Branch, but screening and sedimentation should be accomplished at most of the individual houses. Further study on the use of alum as an aid to sedimentation is being made.

The corn products testing station was built at Argo in 1920 and was in operation up to 1926. Sedimentation tests were made in an Imhoff tank, but the removal of suspended matter was practically negligible, and settling did not seem to be of any benefit for further treatment biologically. The activated sludge process was not satisfactory. A trickling filter 7.5 feet deep gave satisfactory effluents at rates of 700,000 gallons per acre per day, and stood overloads in concentration more successfully than did the activated sludge process. Trickling filters were recommended as the most successful type of treatment.

Attention was also given to the possibility of recovery of some of the waste products in the factory. A remarkable reduction of wastes occurred in 1926, when all of the waste waters from the starch and gluten settlers were returned to the process, recirculated, and finally removed as a valuable feed. This recovery of wastes has reduced the treatment problem to 18 per cent of its original size.

The Control of Malaria. S. P. James. *Indian Medical Gazette*, vol. 62, No. 12, December, 1927, pp. 704-706. (Abstract by J. L. Robertson.)

This article is a summary of a paper read before the section of tropical diseases of the British Medical Association on the conclusions of the malaria commission of the League of Nations regarding the problems of malaria prophylaxis.

The commission concludes that it is not always necessary to deal with malaria by a method arising directly out of the knowledge that the disease is transmitted by mosquitoes. In the vast majority of regions where malaria prevails, anti-malarial measures should be limited to an endeavor to reduce the severity and, so far as possible by the same measures, the incidence of the disease.

It is recognized that any one method of control can not be superior to all others; malaria control is a "local" problem, and considerable freedom of choice of particular methods should be practiced.

In the commission's view there are only two direct antimalarial measures; namely, killing the malaria parasite in man, and killing the malaria parasite in infested mosquitoes. In comparison, anything else done to control malaria is necessarily indirect.

Adopting this restricted definition of direct and indirect means of controlling malaria, the commission suggests that in every malarious locality certain direct methods, which are concerned with malaria-infected individuals and the interior of the houses in which they live, are indispensable.

Reviewing the high incidence and severity found in regions in which the economic and social positions of the inhabitants are poor, and considering the reduction of malaria in regions in which the people are able to adopt a higher standard of living, the commission reaches the conclusion that, of all indirect methods of reducing malaria, the greatest importance must be attached to general schemes which aim at improving the economic and social conditions of the people and their general well-being and standards of life.

For various reasons which are given in the report, the commission is unanimously of the opinion that the scientific study of malaria must be continuously pursued in the laboratory and the field.

House Bill 1157—An Act Enabling the Establishment of County Mosquito Control Commissions and to Define Their Powers and Duties, and for Other Purposes. Leaflet, 2 pages. (Abstract by W. L. Havens.)

A bill recently approved by the Mississippi State Legislature provides for the appointment, by the county board of supervisors, of three commissioners to constitute a county mosquito control commission. The State health officer is also an ex-officio member of the commission. All members serve without compensation except for necessary expense in attendance at meetings.

The commission has power to eliminate breeding and producing places of mosquitoes within the county, and to carry out such plans as may be necessary or proper to survey conditions and carry out remedial measures.

Finances are obtained from annual tax levies when approved by the commission and State health officer, and vary in proportion to the assigned valuation of the county. The act applies only to counties bordering on tide water and on the Mississippi River.

DEATHS DURING WEEK ENDED JULY 21, 1928

Summary of information received by telegraph from industrial insurance companies for the week ended July 21, 1928, and corresponding week of 1927. (From the Weekly Health Index, July 25, 1928, issued by the Bureau of the Census, Department of Commerce)

	Week ended July 21, 1928	Corresponding week, 1927
Policies in force.....	71, 538, 686	68, 096, 639
Number of death claims.....	11, 356	11, 253
Death claims per 1,000 policies in force, annual rate.....	8.3	8.6

Deaths from all causes in certain large cities of the United States during the week ended July 21, 1928, infant mortality, annual death rate, and comparison with corresponding week of 1927. (From the Weekly Health Index, July 25, 1928, issued by the Bureau of the Census, Department of Commerce)

City	Week ended July 21, 1928		Annual death rate per 1,000 corresponding week 1927	Deaths under 1 year		Infant mortality rate, week ended July 21, 1928 ²
	Total deaths	Death rate ¹		Week ended July 21, 1928	Corresponding week 1927	
Total (68 cities).....	6, 541	11.2	10.5	673	604	54
Akron.....	31			4	9	43
Albany ³	30	13.0	18.8	0	4	0
Atlanta.....	74	15.2	12.4	10	9	
White.....	38		8.9	6	3	
Colored.....	36	(⁴)	20.5	4	6	
Baltimore ³	198	12.5	12.0	23	20	73
White.....	148		11.6	19	18	76
Colored.....	50	(⁴)	14.3	4	2	63
Birmingham.....	63	14.8	14.1	9	6	77
White.....	36		9.8	9	1	124
Colored.....	27	(⁴)	20.9	0	5	0
Boston.....	171	11.2	9.9	22	15	61
Bridgeport.....	26			2	1	37
Buffalo.....	122	11.5	10.8	16	16	69
Cambridge.....	20	8.3	8.8	3	2	53
Camden.....	30	11.6	12.1	3	3	48
Canton.....	13	5.8	6.4	3	3	71
Chicago ³	691	11.4	9.0	58	60	50
Cincinnati.....	137	17.3	16.4	9	11	54
Cleveland.....	198	10.2	8.7	15	25	41
Columbus.....	59	10.4	13.6	8	3	75

¹ Annual rate per 1,000 population.

² Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.

³ Deaths for week ended Friday, July 20, 1928.

⁴ In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, Ky., 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

Deaths from all causes in certain large cities of the United States during the week ended July 21, 1928, infant mortality, annual death rate, and comparison with corresponding week of 1927—Continued

City	Week ended July 21, 1928		Annual death rate per 1,000 corresponding week 1927	Deaths under 1 year		Infant mortality rate, week ended July 21, 1928
	Total deaths	Death rate		Week ended July 21, 1928	Corresponding week 1927	
Dallas.....	45	10.8	12.6	3	11	-----
White.....	33		12.7	3	11	-----
Colored.....	12	(¹)	11.4	0	0	-----
Dayton.....	37	10.5	10.7	6	5	99
Denver.....	62	11.0	9.5	5	5	-----
Des Moines.....	21	7.2	9.5	1	1	17
Detroit.....	250	9.5	7.6	35	29	54
Duluth.....	15	6.7	9.5	2	2	47
El Paso.....	24	10.7	12.4	3	4	-----
Erie.....	24			4	2	82
Fall River.....	16	6.2	9.0	1	1	17
Flint.....	24	8.4	6.6	6	4	77
Fort Worth.....	35	10.9	9.2	7	2	-----
White.....	30		8.3	7	2	-----
Colored.....	5	(¹)	16.0	0	0	-----
Grand Rapids.....	23	7.3	8.1	5	5	75
Houston.....	61			13	9	-----
White.....	47			4	7	-----
Colored.....	14	(¹)		9	2	-----
Indianapolis.....	80	10.9	11.8	11	6	84
White.....	65		10.6	9	5	78
Colored.....	15	(¹)	21.0	2	1	121
Jersey City.....	63	10.1	10.2	14	1	105
Kansas City, Kans.....	25	11.0	12.4	5	1	106
White.....	14		13.0	3	1	74
Colored.....	11	(¹)	9.8	2	0	290
Kansas City, Mo.....	106	14.2	11.3	13	4	92
Knoxville.....	28	13.9	9.2	8	0	174
White.....	22		7.0	6	0	145
Colored.....	6	(¹)	25.6	2	0	427
Los Angeles.....	226			16	23	46
Louisville.....	76	12.1	13.2	7	3	59
White.....	62		12.7	-----	2	-----
Colored.....	14	(¹)	16.0	-----	1	-----
Lowell.....	30	14.2	13.2	3	8	63
Lynn.....	12	5.9	7.0	2	2	50
Memphis.....	87	23.9	18.7	11	9	129
White.....	42		14.9	5	8	94
Colored.....	45	(¹)	25.5	6	1	188
Milwaukee.....	94	9.0	8.2	9	15	40
Minneapolis.....	78	8.9	8.3	10	6	60
Nashville.....	52	19.6	16.6	3	4	47
White.....	33		12.1	2	2	43
Colored.....	19	(¹)	28.1	1	2	60
New Bedford.....	25	10.9	8.3	5	4	108
New Haven.....	29	8.1	9.6	2	2	28
New Orleans.....	130	15.8	16.3	15	16	73
White.....	75		12.9	7	8	51
Colored.....	55	(¹)	26.0	8	8	116
New York.....	1,262	11.0	10.1	11	103	45
Bronx Borough.....	157	8.6	8.8	17	15	51
Brooklyn Borough.....	455	10.3	8.3	38	38	38
Manhattan Borough.....	496	14.8	13.1	40	39	47
Queens Borough.....	121	7.4	8.2	15	13	60
Richmond Borough.....	33	11.4	16.4	1	3	18
Newark, N. J.....	75	8.3	9.7	6	9	31
Oakland.....	55	10.5	8.2	7	3	76
Oklahoma City.....	32			2	5	-----
Omaha.....	44	10.3	11.9	4	3	46
Faterson.....	23	8.3	11.2	1	6	17
Philadelphia.....	418	10.6	11.6	36	35	43
Pittsburgh.....	146	11.4	8.0	19	9	62
Portland, Oreg.....	54			4	4	43
Providence.....	75	13.7	9.1	9	5	78

¹ Deaths for week ended Friday, July 20, 1928.

² In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, Ky., 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

Deaths from all causes in certain large cities of the United States during the week ended July 21, 1928, infant mortality, annual death rate, and comparison with corresponding week of 1927—Continued

City	Week ended July 21, 1928		Annual death rate per 1,000 corresponding week 1927	Deaths under 1 year		Infant mortality rate, week ended July 21, 1928
	Total deaths	Death rate		Week ended July 21, 1928	Corresponding week 1927	
Richmond.....	56	15.1	13.0	7	5	91
White.....	30	9.2	9.2	3	1	61
Colored.....	26	(*)	22.5	4	4	147
Rochester.....	65	10.3	8.4	7	4	57
St. Louis.....	203	12.5	12.0	12	11	40
St. Paul.....	46	9.5	9.4	4	0	38
Salt Lake City ¹	30	11.4	11.5	5	2	82
San Antonio.....	67	16.1	17.3	15	8	-----
San Diego.....	39	17.0	14.9	1	2	19
San Francisco.....	145	13.0	13.8	10	8	63
Schenectady.....	13	7.3	8.4	2	1	63
Seattle.....	64	8.7	8.9	4	3	41
Somerville.....	18	9.2	5.6	4	0	138
Spokane.....	24	11.5	13.9	1	1	26
Springfield, Mass.....	43	15.0	12.0	6	2	95
Syracuse.....	40	10.5	10.1	1	5	12
Toledo.....	64	10.7	8.9	5	6	48
Trenton.....	34	12.8	12.6	2	2	34
Washington, D. C.....	115	10.9	12.0	10	13	57
White.....	65	9.3	9.3	5	7	41
Colored.....	55	(*)	19.9	5	6	92
Waterbury.....	15	-----	-----	1	1	29
Wilmington, Del.....	22	9.0	12.0	2	2	53
Worcester.....	46	12.2	13.9	4	4	49
Yonkers.....	12	5.2	10.5	2	7	46
Youngstown.....	24	7.2	11.4	5	6	67

¹ Deaths for week ended Friday, July 20, 1928.

⁴ In the cities for which deaths are shown by color, the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, Ky., 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended July 28, 1928, and July 30, 1927

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended July 28, 1928, and July 30, 1927

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended July 28, 1928	Week ended July 30, 1927	Week ended July 28, 1928	Week ended July 30, 1927	Week ended July 28, 1928	Week ended July 30, 1927	Week ended July 28, 1928	Week ended July 30, 1927
New England States:								
Maine.....	1	2	3		77	25	1	0
New Hampshire.....	4				10		0	
Vermont.....	1				18	3	0	0
Massachusetts.....	26	61	52	4	218	151	2	1
Rhode Island.....	5	6			199	2	0	0
Connecticut.....	9	23	3	3	109	10	1	0
Middle Atlantic States:								
New York.....	162	173	14	14	410	175	24	5
New Jersey.....	58	57	3	1	193	28	2	1
Pennsylvania.....	69	104		134	476	134	3	2
East North Central States:								
Ohio.....	50		6		321		8	
Indiana.....	9	12			22	10	2	0
Illinois.....	73	78	52	91	47	81	7	3
Michigan.....	43	40	1	2	191	158	3	7
Wisconsin.....	18	40	17	12	18	124	2	3
West North Central States:								
Minnesota.....	20	30	2		3	12	0	0
Iowa.....	3	15			5	4	1	0
Missouri.....	18	18	1		14	20	1	1
North Dakota.....					10	3	3	1
South Dakota.....		2		1	3	1	1	0
Nebraska.....		3			1	21	0	0
Kansas.....	7	8	3	2	5	77	0	0
South Atlantic States:								
Delaware.....		1				1	0	0
Maryland ¹	14	32	1		21	9	2	0
District of Columbia.....		18				1		0
Virginia.....							1	
West Virginia.....	4	14	8	1	10	32	0	0
North Carolina.....	25	17			18	188	1	0
South Carolina.....	7	16	214	100	6	44	0	0
Georgia.....	2	21	25	17	4	9	0	0
Florida.....	14		28		4		0	
East South Central States:								
Kentucky.....	7				20		0	
Tennessee.....	7	12	33	2	15	3	1	1
Alabama.....	13	13	29	18	66	14	3	0
Mississippi.....	6	10		2		0		

¹ New York City only.

² Week ended Friday.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended July 28, 1928, and July 30, 1927—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended July 28, 1928	Week ended July 30, 1927	Week ended July 28, 1928	Week ended July 30, 1927	Week ended July 28, 1928	Week ended July 30, 1927	Week ended July 28, 1928	Week ended July 30, 1927
West South Central States:								
Arkansas.....	2	5	2	-----	17	6	0	1
Louisiana.....	9	14	5	11	6	16	0	0
Oklahoma ¹	8	10	29	8	5	31.	1	1
Texas.....	9	15	10	14	-----	3	0	1
Mountain States:								
Montana.....	1	1	-----	-----	2	6	1	2
Idaho.....	-----	2	-----	-----	1	-----	2	0
Wyoming.....	-----	1	-----	2	1	3	1	0
Colorado.....	10	4	-----	-----	16	11	1	1
New Mexico.....	2	1	-----	-----	2	28	0	0
Arizona.....	1	-----	-----	-----	5	230	0	0
Utah ¹	1	5	2	2	1	2	0	0
Pacific States:								
Washington.....	7	17	-----	-----	9	108	0	2
Oregon.....	9	9	5	9	12	28	2	1
California.....	50	73	12	3	19	77	7	5

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended July 28, 1928	Week ended July 30, 1927	Week ended July 28, 1928	Week ended July 30, 1927	Week ended July 28, 1928	Week ended July 30, 1927	Week ended July 28, 1928	Week ended July 30, 1927
New England States:								
Maine.....	4	0	9	7	0	0	6	0
New Hampshire.....	0	-----	2	-----	0	-----	0	-----
Vermont.....	1	0	1	3	0	0	1	0
Massachusetts.....	8	1	46	117	0	0	6	7
Rhode Island.....	0	0	5	3	0	0	0	1
Connecticut.....	1	1	5	10	0	0	1	3
Middle Atlantic States:								
New York.....	21	17	59	105	0	3	31	29
New Jersey.....	1	1	22	36	0	0	10	12
Pennsylvania.....	1	0	71	112	36	0	27	41
East North Central States:								
Ohio.....	13	-----	43	-----	5	-----	30	-----
Indiana.....	0	0	23	15	16	24	5	7
Illinois.....	3	6	59	75	20	15	25	53
Michigan.....	0	1	65	73	15	15	6	19
Wisconsin.....	1	3	45	46	11	11	2	2
West North Central States:								
Minnesota.....	1	5	28	53	0	2	0	5
Iowa.....	0	0	14	15	8	12	1	6
Missouri.....	0	0	17	24	2	5	16	17
North Dakota.....	1	0	15	11	0	1	4	1
South Dakota.....	0	0	1	10	0	3	1	1
Nebraska.....	0	0	7	7	4	3	3	1
Kansas.....	0	4	17	17	20	12	14	15
South Atlantic States:								
Delaware.....	0	0	0	0	0	0	0	2
Maryland ¹	6	0	7	15	0	0	18	26
District of Columbia.....	-----	0	-----	9	-----	0	-----	3
Virginia.....	0	-----	0	-----	0	-----	0	-----
West Virginia.....	4	0	19	42	3	13	13	22
North Carolina.....	4	1	17	30	20	12	71	78
South Carolina.....	1	1	3	8	3	4	128	113
Georgia.....	1	0	4	5	0	0	78	72
Florida.....	0	-----	1	-----	0	-----	12	-----
East South Central States:								
Kentucky.....	4	-----	7	-----	0	-----	28	-----
Tennessee.....	2	0	3	14	4	1	56	165
Alabama.....	2	1	5	11	4	9	74	63
Mississippi.....	0	1	6	7	0	6	48	31

¹ Week ended Friday.

¹ Figures for 1928 are exclusive of Oklahoma City and Tulsa; and for 1927 are exclusive of Tulsa only.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended July 28, 1928, and July 30, 1927—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended July 28, 1928	Week ended July 30, 1927	Week ended July 28, 1928	Week ended July 30, 1927	Week ended July 28, 1928	Week ended July 30, 1927	Week ended July 28, 1928	Week ended July 30, 1927
West South Central States:								
Arkansas.....	0	0	2	2	3	1	39	23
Louisiana.....	0	0	3	5	1	0	48	23
Oklahoma ¹	1	10	3	19	31	7	48	98
Texas.....	1	11	3	8	16	5	15	9
Mountain States:								
Montana.....	0	2	4	10	15	1	1	6
Idaho.....	0	0	0	4	3	4	0	1
Wyoming.....	0	0	0	0	2	2	0	1
Colorado.....	0	1	10	16	0	0	2	0
New Mexico.....	1	16	8	8	0	0	8	9
Arizona.....	0	0	1	0	1	0	1	0
Utah ¹	0	1	3	5	1	3	0	1
Pacific States:								
Washington.....	7	0	7	21	20	37	1	14
Oregon.....	1	0	7	6	30	10	3	6
California.....	7	59	57	53	15	6	10	19

¹ Week ended Friday.

² Figures for 1928 are exclusive of Oklahoma City and Tulsa, and for 1927 are exclusive of Tulsa only.

Report for Week Ended July 21, 1928

DISTRICT OF COLUMBIA

	Cases
Diphtheria.....	11
Measles.....	23
Scarlet fever.....	4

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Menin- gococ- cus menin- gitis	Diph- theria	Influenza	Malaria	Measles	Pellagra	Poliomye- litis	Scarlet fever	Small- pox	Ty- phoid fever
<i>June, 1928</i>										
Arkansas.....	1	11	281	447	375	232	0	21	17	35
California.....	11	330	106	2	199	8	25	509	68	52
Illinois.....	26	541	218	2	853	2	4	858	92	41
Indiana.....	5	93	51	-----	1,580	-----	3	231	311	14
Iowa.....	4	26	-----	-----	30	-----	0	135	140	7
Maine.....	2	17	85	-----	236	1	0	73	0	15
Maryland.....	0	114	33	8	966	-----	5	152	0	32
Minnesota.....	8	110	8	1	205	-----	3	355	9	9
Missouri.....	39	117	30	10	1,454	1	1	318	145	28
New York.....	125	1,450	178	20	12,551	-----	17	1,435	15	44
North Carolina.....	0	62	-----	-----	1,410	-----	3	77	160	56
Rhode Island.....	0	30	3	-----	924	-----	0	76	0	3
West Virginia.....	2	30	270	-----	228	-----	6	55	54	25
Wisconsin.....	11	51	294	-----	193	-----	2	409	53	5
Wyoming.....	0	9	7	-----	28	-----	0	50	5	38

	June, 1928	Cases		Cases
Actinomycosis:			Paratyphoid fever:	
California	1	California	.....
Anthrax:			Illinois	.....
Arkansas	1	Maine	.....
New York	1	New York	.....
Chicken pox:			Wisconsin	.....
Arkansas	46	Puerperal septicemia:	
California	1,232	Illinois	.....
Illinois	1,073	New York	.....
Indiana	162	Rabies (in animals):	
Iowa	140	California	.....
Maine	156	Illinois	.....
Maryland	215	Maryland	.....
Minnesota	326	Missouri	.....
Missouri	140	New York	.....
New York	1,619	Rhode Island	.....
North Carolina	195	Rabies (in man):	
Rhode Island	24	California	.....
West Virginia	92	Remittent fever:	
Wisconsin	804	Illinois	.....
Wyoming	15	Rocky Mountain spotted or tick fever:	
Dysentery:			Wyoming	.....
California (amebic)	3	Scabies:	
California (bacillary)	3	Iowa	.....
Illinois	16	Septic sore throat:	
Maryland	5	Illinois	.....
Minnesota	9	Maryland	.....
New York	3	Missouri	.....
German measles:			New York	.....
California	455	North Carolina	.....
Illinois	36	Tetanus:	
Maine	21	California	.....
Maryland	239	Illinois	.....
New York	1,944	Maine	.....
North Carolina	14	Maryland	.....
Rhode Island	4	New York	.....
Impetigo contagiosa:			Trachoma:	
Maryland	2	Arkansas	.....
Lead poisoning:			California	.....
Illinois	4	Illinois	.....
Leprosy:			Maine	.....
California	1	Minnesota	.....
Lethargic encephalitis:			Missouri	.....
California	5	Rhode Island	.....
Illinois	11	Wisconsin	.....
Maine	1	Tularaemia:	
Maryland	1	California	.....
Minnesota	1	Iowa	.....
New York	21	Wyoming	.....
Wisconsin	5	Typhus fever:	
Mumps:			New York	.....
Arkansas	45	North Carolina	.....
California	758	Undulant (Malta) fever:	
Illinois	492	Iowa	.....
Indiana	106	Maryland	.....
Iowa	119	Vincent's angina:	
Maine	104	Maine	.....
Maryland	177	Maryland	.....
Missouri	192	New York	.....
New York	999	Whooping cough:	
Rhode Island	47	Arkansas	.....
Wisconsin	188	California	.....
Wyoming	19	Illinois	.....
Ophthalmia neonatorum:			Indiana	.....
Arkansas	3	Iowa	.....
California	4	Maine	.....
Illinois	34	Maryland	.....
Iowa	1	Minnesota	.....
Maryland	2	Missouri	.....
Missouri	2	New York	.....
New York	5	North Carolina	.....
North Carolina	1	Rhode Island	.....
Rhode Island	1	West Virginia	.....
			Wisconsin	.....
			Wyoming	.....

**Number of Cases of Certain Communicable Diseases Reported for the Month of
May, 1928, by State Health Officers**

State	Chick- en pox	Diph- theria	Meas- les	Mumps	Scarlet fever	Small- pox	Tuber- cu- losis	Ty- phoid fever	Whoop- ing cough
Maine.....	107	12	136	126	86	0	23	6	142
New Hampshire ¹	-----	-----	-----	-----	-----	-----	-----	-----	-----
Vermont.....	107	-----	228	79	47	1	17	3	46
Massachusetts.....	553	315	4,252	678	1,049	5	594	14	726
Rhode Island.....	26	37	1,424	139	190	0	43	10	28
Connecticut.....	314	98	1,472	466	385	11	167	4	446
New York.....	1,748	1,464	18,060	1,581	2,575	50	1,867	62	1,901
New Jersey.....	1,738	560	8,969	-----	956	3	512	16	654
Pennsylvania.....	1,434	683	12,754	2,603	1,788	16	1,115	69	1,233
Ohio.....	969	370	4,739	953	914	165	757	21	548
Indiana.....	227	65	2,200	267	337	454	247	11	88
Illinois.....	1,022	434	1,104	891	1,165	286	1,391	39	1,110
Michigan.....	413	319	4,925	987	1,190	95	560	17	622
Wisconsin.....	891	94	347	473	958	58	142	4	377
Minnesota.....	326	74	437	-----	535	14	315	4	297
Iowa.....	142	38	51	255	233	211	51	2	39
Missouri.....	249	122	2,139	500	409	249	206	28	225
North Dakota.....	35	5	70	23	100	10	26	2	41
South Dakota.....	45	8	289	13	118	29	7	0	19
Nebraska.....	168	33	306	108	395	0	² 18	2	45
Kansas.....	277	37	833	487	472	320	219	16	363
Delaware.....	6	-----	148	15	3	0	² 10	2	6
Maryland.....	358	154	3,125	320	289	2	332	29	265
District of Columbia.....	55	68	950	-----	202	4	104	3	29
Virginia.....	466	40	3,069	-----	116	23	² 119	25	518
West Virginia.....	124	36	356	-----	108	153	72	21	29
North Carolina.....	360	64	4,348	-----	108	253	-----	28	466
South Carolina.....	150	124	963	18	28	32	213	68	250
Georgia.....	140	35	746	78	65	22	95	38	84
Florida.....	184	27	621	73	20	13	99	49	22
Kentucky ³	-----	-----	-----	-----	-----	-----	-----	-----	-----
Tennessee.....	94	43	842	288	74	133	162	36	96
Alabama.....	156	40	1,348	89	30	51	332	26	107
Mississippi.....	626	59	4,574	898	44	11	283	72	1,619
Arkansas.....	90	20	1,441	179	105	37	² 41	29	57
Louisiana.....	71	71	1,010	14	43	110	² 187	72	76
Oklahoma ⁴	68	44	1,113	111	139	338	44	15	100
Texas ³	-----	-----	-----	-----	-----	-----	-----	-----	-----
Montana.....	63	11	91	6	62	74	22	18	14
Idaho.....	9	2	10	4	21	52	² 4	10	1
Wyoming.....	24	1	65	15	80	2	-----	0	32
Colorado.....	215	46	846	405	370	39	162	8	195
New Mexico ³	-----	-----	-----	-----	-----	-----	-----	-----	-----
Arizona.....	28	30	151	75	11	37	² 124	10	12
Utah ³	-----	-----	-----	-----	-----	-----	-----	-----	-----
Nevada ³	-----	-----	-----	-----	-----	-----	-----	-----	-----
Washington.....	565	61	438	364	151	150	193	20	87
Oregon.....	163	25	185	99	75	188	63	14	16
California.....	2,807	458	566	1,630	824	140	972	77	1,432

¹ Report not received at time of going to press.² Pulmonary.³ Reports received weekly.⁴ Exclusive of Oklahoma City and Tulsa.⁵ Reports received annually.

Case Rates per 1,000 Population (Annual Basis) for the Month of May, 1928

State	Chick- en pox	Diph- theria	Meas- les	Mumps	Scarlet fever	Small- pox	Tuber- cu- losis	Ty- phoid fever	Whoop- ing cough
Maine.....	1.59	0.18	2.02	1.87	1.28	0.00	0.34	0.09	2.11
New Hampshire ¹									
Vermont.....	3.58		7.64	2.65	1.57	.03	.57	.10	1.54
Massachusetts.....	1.52	.87	11.70	1.87	2.89	.01	1.63	.04	2.00
Rhode Island.....	.43	.61	23.48	2.29	3.13	.00	.71	.16	.46
Connecticut.....	2.22	.69	10.42	3.30	2.73	.08	1.18	.03	3.16
New York.....	1.79	1.50	18.46	1.62	2.63	.05	1.91	.06	1.94
New Jersey.....	2.28	1.73	27.71		2.95	.01	1.58	.05	2.02
Pennsylvania.....	1.72	.82	15.28	3.12	2.14	.02	1.34	.08	1.48
Ohio.....	1.68	.64	8.20	1.65	1.58	.29	1.31	.04	.95
Indiana.....	.84	.24	8.18	.99	1.25	1.69	.92	.04	.33
Illinois.....	1.63	.69	1.76	1.42	1.86	.46	2.22	.06	1.77
Michigan.....	1.06	.82	12.67	2.54	3.06	.24	1.44	.04	1.60
Wisconsin.....	3.56	.38	1.39	1.89	3.83	.23	.57	.02	1.51
Minnesota.....	1.41	.32	1.90		2.32	.06	1.37	.02	1.29
Iowa.....	.69	.18	.25	1.24	1.13	1.03	.25	.01	.19
Missouri.....	.83	.41	7.17	1.68	1.37	.83	.69	.09	.75
North Dakota.....	.64	.09	1.29	.42	1.84	.18	.48	.04	.75
South Dakota.....	.75	.13	4.85	.22	1.98	.49	.12	.00	.32
Nebraska.....	1.41	.28	2.57	.91	3.31	.00	1.15	.02	.38
Kansas.....	1.78	.24	5.36	3.13	3.04	2.06	1.41	.10	2.34
Delaware.....	.29		7.16	.73	.15	.00	.48	.10	.29
Maryland.....	2.62	1.13	22.83	2.34	2.11	.01	2.43	.21	1.94
District of Columbia.....	1.18	1.45	20.32		4.82	.09	2.22	.06	.62
Virginia.....	2.14	.18	14.07		.53	.11	2.55	.11	2.38
West Virginia.....	.85	.25	2.44		.74	1.05	.49	.14	.20
North Carolina.....	1.45	.26	17.47		.43	1.02		.11	1.87
South Carolina.....	.95	.79	6.10	.11	.18	.20	1.35	.43	1.58
Georgia.....	.52	.13	2.75	.29	.24	.08	.35	.14	.31
Florida.....	1.54	.31	5.20	.61	.17	.11	.83	.41	.18
Kentucky ²									
Tennessee.....	.44	.20	3.97	1.36	.35	.63	.76	.17	.45
Alabama.....	.72	.18	6.19	.41	.14	.23	1.52	.12	.49
Mississippi.....	4.13	.39	30.16	5.92	.29	.07	1.87	.47	10.68
Arkansas.....	.55	.12	8.75	1.09	.64	.22	1.25	.18	.35
Louisiana.....	.43	.43	6.12	.08	.26	.67	1.13	.44	.46
Oklahoma ⁴.....	.37	.24	6.12	.64	.76	1.86	.24	.08	.55
Texas ⁵									
Montana.....	1.36	.24	1.96	.13	1.33	1.59	.47	.39	.30
Idaho.....	.19	.04	.22	.09	.45	1.12	1.09	.22	.02
Wyoming.....	1.15	.05	3.11	.72	3.82	.10		.00	1.53
Colorado.....	2.33	.50	9.16	4.39	4.01	.42	1.75	.09	2.11
New Mexico ³									
Arizona.....	.70	.75	3.76	1.87	.27	.92	3.09	.25	.30
Utah ⁴									
Nevada ⁴									
Washington.....	4.20	.45	3.26	2.71	1.12	1.12	1.44	.15	.65
Oregon.....	2.13	.33	2.42	1.30	.96	2.46	.82	.18	.21
California.....	7.27	1.19	1.47	4.22	2.13	.36	2.52	.20	3.84

¹ Report not received at time of going to press.

² Pulmonary.

³ Reports received weekly.

⁴ Exclusive of Oklahoma City and Tulsa.

⁵ Reports received annually.

RECIPROCAL NOTIFICATIONS

Notifications regarding communicable diseases sent during the month of June, 1928, by departments of health of the States named, to other State health departments

Disease	California	Illinois	Minnesota	New Hampshire	New York	Ohio	Washington
Diphtheria.....	1	1					
Dysentery (amebic).....			1				
Gonorrhoea.....						1	
Measles.....					1		
Scarlet fever.....		1	2		2		
Smallpox.....	1	4					
Syphilis.....							2
Tuberculosis.....			25				
Tularaemia.....	1						
Typhoid fever.....				1			

PLAGUE IN CALIFORNIA

A case of bubonic plague has been reported at Camp Del Monte, Calif. The patient died at the hospital at the Presidio of Monterey, Calif., July 27, 1928.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 100 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 31,325,000. The estimated population of the 94 cities reporting deaths is more than 30,630,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended July 14, 1928, and July 16, 1927

	1928	1927	Estimated expectancy
<i>Cases reported</i>			
Diphtheria:			
43 States.....	887	1,157	
100 cities.....	505	677	561
Measles:			
42 States.....	4,475	2,823	
100 cities.....	1,588	918	
Poliomyelitis:			
43 States.....	41	105	
Scarlet fever:			
43 States.....	1,098	1,444	
100 cities.....	310	498	374
Smallpox:			
43 States.....	397	399	
100 cities.....	42	53	53
Typhoid fever:			
43 States.....	730	993	
100 cities.....	104	125	122
<i>Deaths reported</i>			
Influenza and pneumonia:			
94 cities.....	382	342	
Smallpox:			
94 cities.....	0	0	

City reports for week ended July 14, 1928

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible but no year earlier than 1919 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1926, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland.....	76,400	4	1	1	0	0	9	0	0
New Hampshire:									
Concord.....	122,546	0	0	1	0	0	0	0	0
Manchester.....	84,000	0	1	0	0	0	0	0	2
Vermont:									
Barre.....	110,008	1	0	0	0	0	3	0	0
Massachusetts:									
Boston.....	787,000	36	36	11	3	1	26	2	12
Fall River.....	131,000	2	2	2	0	0	39	0	3
Springfield.....	145,000	4	0	1	0	0	41	2	0
Worcester.....	193,000	1	2	0	0	0	25	5	0
Rhode Island:									
Pawtucket.....	71,000	0	1	1	0	0	1	0	3
Providence.....	275,000	0	4	10	0	1	128	1	3
Connecticut:									
Bridgeport.....	(?)	0	3	4	0	0	15	0	2
Hartford.....	164,000	8	3	3	0	0	32	4	3
New Haven.....	182,000	8	1	1	0	0	19	6	3
MIDDLE ATLANTIC									
New York:									
Buffalo.....	544,000	4	8	8	0	0	8	14	14
New York.....	5,924,000	73	155	151	4	4	389	6	75
Rochester.....	321,000	4	5	1	0	0	34	16	4
Syracuse.....	185,000	5	3	0	0	0	34	6	4
New Jersey:									
Camden.....	131,000	0	4	3	0	0	4	1	2
Newark.....	459,000	12	8	26	1	0	31	4	4
Trenton.....	134,000	0	1	2	0	0	31	0	0
Pennsylvania:									
Philadelphia.....	2,008,000	22	43	30	0	2	150	9	27
Pittsburgh.....	637,000	12	13	16	0	0	28	13	18
Reading.....	114,000	2	1	1	0	0	7	0	0
EAST NORTH CENTRAL									
Ohio:									
Cincinnati.....	411,000	1	5	4	1	0	0	0	5
Cleveland.....	960,000	43	20	16	1	2	131	8	12
Columbus.....	285,000	1	2	7	0	0	24	1	1
Toledo.....	295,000	14	3	0	0	0	40	2	6
Indiana:									
Fort Wayne.....	99,900	0	1	2	0	0	0	0	0
Indianapolis.....	367,000	10	3	1	0	0	25	5	3
South Bend.....	81,700	0	0	1	0	0	0	0	0
Terre Haute.....	71,900	0	0	1	0	0	1	0	0
Illinois:									
Chicago.....	3,048,000	81	52	66	2	2	40	10	26
Springfield.....	64,700	1	0	0	0	0	2	1	0
Michigan:									
Detroit.....	¹ 1,242,044	18	31	24	1	0	65	2	17
Flint.....	136,000	1	3	0	0	0	12	0	5
Grand Rapids.....	156,000	3	2	1	0	0	21	2	1
Wisconsin:									
Kenosha.....	52,700	15	1	0	0	0	0	0	0
Milwaukee.....	517,000	43	9	2	2	2	7	14	10
Racine.....	69,400	0	1	0	0	0	0	0	0
Superior.....	¹ 39,671	0	0	0	0	0	0	0	2

¹ Estimated, July 1, 1925.² No estimate made.³ Special census.

City reports for week ended July 14, 1928—Continued

Division, State, and city	Population July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
WEST NORTH CENTRAL									
Minnesota:									
Duluth.....	113,009	1	0	0	0	0	1	0	3
Minneapolis.....	434,000	13	10	8	0	2	9	2	2
St. Paul.....	248,006	12	8	0	0	0	6	2	6
Iowa:									
Davenport.....	152,469	13	0	0	0	0	0	0	-----
Des Moines.....	146,000	0	1	0	0	0	0	0	-----
Sioux City.....	78,000	5	1	0	0	0	0	0	-----
Waterloo.....	36,900	12	0	0	0	0	2	5	-----
Missouri:									
Kansas City.....	375,000	4	2	2	0	0	3	3	1
St. Joseph.....	78,400	0	0	0	0	0	1	0	0
St. Louis.....	830,000	1	20	17	0	0	35	2	-----
North Dakota:									
Fargo.....	126,403	0	0	0	0	0	0	0	0
Grand Forks.....	114,811	0	0	0	0	0	0	0	-----
South Dakota:									
Aberdeen.....	115,036	4	0	0	0	0	0	0	-----
Sioux Falls.....	130,127	0	0	0	0	0	0	0	-----
Nebraska:									
Lincoln.....	62,000	0	0	1	0	0	0	5	0
Omaha.....	216,000	3	2	0	0	0	0	1	0
Kansas:									
Topeka.....	56,500	6	0	0	0	0	3	2	0
Wichita.....	92,500	4	1	0	0	0	0	0	1
SOUTH ATLANTIC									
Delaware:									
Wilmington.....	124,000	0	0	0	0	0	12	0	1
Maryland:									
Baltimore.....	808,000	9	12	10	0	1	17	14	9
Cumberland.....	133,741	0	0	0	0	0	0	0	0
Frederick.....	112,035	0	0	1	0	0	1	0	0
District of Columbia:									
Washington.....	528,000	2	4	13	1	1	26	0	2
Virginia:									
Lynchburg.....	138,493	3	0	0	0	0	4	5	0
Norfolk.....	174,000	0	0	0	0	0	1	0	1
Richmond.....	189,000	0	1	3	0	0	5	0	4
Roanoke.....	61,900	0	0	1	0	0	1	0	0
West Virginia:									
Charleston.....	50,700	0	0	0	0	1	0	0	2
Wheeling.....	156,208	2	0	0	0	0	2	0	1
North Carolina:									
Raleigh.....	130,371	1	0	0	0	0	0	0	0
Wilmington.....	37,700	0	0	0	0	0	0	0	0
Winston-Salem.....	71,800	0	0	1	0	0	0	0	2
South Carolina:									
Charleston.....	74,100	0	0	0	31	0	0	0	1
Columbia.....	41,800	2	0	0	0	0	0	1	0
Greenville.....	127,311	0	0	0	0	0	0	0	0
Georgia:									
Atlanta.....	(2)	0	1	4	4	0	2	0	3
Brunswick.....	116,809	0	0	0	0	0	0	1	0
Savannah.....	94,900	1	0	0	4	0	0	0	0
Florida:									
Miami.....	131,286	0	2	0	0	0	0	0	1
St. Petersburg.....	47,629	0	0	0	0	0	0	0	0
Tampa.....	102,000	0	0	0	1	1	0	1	2
EAST SOUTH CENTRAL									
Kentucky:									
Covington.....	58,500	0	1	0	0	0	0	0	3
Louisville.....	311,000	1	-----	-----	-----	-----	-----	-----	-----
Tennessee:									
Memphis.....	177,000	0	0	1	0	0	3	0	3
Nashville.....	137,000	4	0	0	0	0	22	0	1
Alabama:									
Birmingham.....	211,000	1	1	0	0	1	7	10	3
Mobile.....	66,800	0	0	0	2	0	0	0	0
Montgomery.....	47,000	0	0	0	1	-----	0	0	-----

1 Estimated, July 1, 1925.

2 No estimate made.

3 Special census.

City reports for week ended July 14, 1928—Continued

Division, State, and city	Population July 1, 1928, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith.....	131,643	0	0	0	0	0	0	0	2
Little Rock.....	75,900	0	0	0	0	0	1	0	
Louisiana:									
New Orleans.....	419,000	0	4	1	1	2	1	0	5
Shreveport.....	59,500	0	0	0	0	0	0	0	0
Oklahoma:									
Oklahoma City.....	(¹)	1	1	1	2	0	2	0	2
Texas:									
Dallas.....	203,000	0	2	2	1	1	4	0	0
Fort Worth.....	159,060	0	2	0	0	0	0	0	0
Galveston.....	49,100	0	0	2	0	0	0	0	1
Houston.....	1164,954	0	2	4	0	1	0	0	4
San Antonio.....	205,000	0	1	1	0	2	0	0	5
MOUNTAIN									
Montana:									
Billings.....	117,971	1	0	0	0	0	0	0	0
Great Falls.....	129,883	0	0	0	0	0	2	0	0
Helena.....	112,037	0	0	0	0	0	0	0	0
Missoula.....	112,668	0	0	0	0	0	0	0	1
Idaho:									
Boise.....	123,042	0	0	0	0	0	0	0	0
Colorado:									
Denver.....	285,000	23	8	7	0	15	24	4	4
Pueblo.....	43,900	3	1	1	0	7	1	0	0
New Mexico:									
Albuquerque.....	121,000	0	0	0	0	1	0	0	1
Utah:									
Salt Lake City.....	133,000	12	3	0	0	2	3	0	2
Nevada:									
Reno.....	112,665	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle.....	(²)	11	4	1	0	2	7	0	0
Spokane.....	109,000	31	1	0	0	1	0	0	0
Tacoma.....	106,000	1	2	0	0	2	6	0	1
Oregon:									
Portland.....	1282,363	7	5	2	0	8	2	0	5
California:									
Los Angeles.....	(²)	11	34	17	1	3	17	13	0
Sacramento.....	73,400	0	2	0	2	1	0	1	0
San Francisco.....	567,000	4	9	10	3	1	7	0	2

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland.....	0	1	0	0	0	0	1	0	1	1	20
New Hampshire:											
Concord.....	0	0	0	0	0	0	0	0	0	0	8
Manchester.....	0	0	0	0	0	0	0	0	0	0	13
Vermont:											
Barre.....	0	0	0	0	0	2	0	0	0	0	4
Massachusetts:											
Boston.....	24	24	0	0	0	12	2	3	0	34	191
Fall River.....	1	0	0	0	0	2	1	1	0	4	22
Springfield.....	2	1	0	0	0	0	0	0	0	0	37
Worcester.....	3	3	0	0	0	1	1	0	0	5	27

¹ Estimated July 1, 1925.

² No estimate made.

City reports for week ended July 14, 1928—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
NEW ENGLAND— continued											
Rhode Island:											
Pawtucket.....	0	3	0	0	0	1	0	0	0	1	17
Providence.....	3	5	0	0	0	0	0	2	0	2	
Connecticut:											
Bridgeport.....	3	1	0	0	0	1	0	0	0	2	24
Hartford.....	2	0	0	0	0	1	0	0	0	7	39
New Haven.....	1	0	0	0	0	1	1	0	0	17	40
MIDDLE ATLANTIC											
New York:											
Buffalo.....	8	11	0	1	0	10	0	0	0	32	121
New York.....	56	35	1	0	0	94	20	7	1	79	1,227
Rochester.....	4	1	0	0	0	2	1	1	0	8	70
Syracuse.....	3	1	0	0	0	1	1	0	0	10	46
New Jersey:											
Camden.....	1	1	0	0	0	0	0	0	0	0	20
Newark.....	8	7	0	0	0	6	1	0	0	44	74
Trenton.....	0	0	0	0	0	1	0	2	0	2	34
Pennsylvania:											
Philadelphia.....	31	13	0	0	0	32	5	4	0	0	435
Pittsburgh.....	13	6	1	0	0	9	2	5	1	39	157
Reading.....	0	1	0	0	0	1	0	0	0	9	25
EAST NORTH CENTRAL											
Ohio:											
Cincinnati.....	5	7	0	2	0	8	1	2	0	7	119
Cleveland.....	15	2	1	0	0	13	2	0	0	55	184
Columbus.....	3	0	1	0	0	7	0	2	1	9	74
Toledo.....	4	6	0	0	0	6	0	0	0	32	79
Indiana:											
Fort Wayne.....	1	0	1	2	0	1	0	0	0	0	17
Indianapolis.....	2	2	2	0	0	5	1	0	0	12	70
South Bend.....	0	0	0	1	0	0	1	0	0	1	6
Terre Haute.....	0	1	0	0	0	0	0	0	0	4	30
Illinois:											
Chicago.....	41	33	1	1	0	44	4	8	0	117	615
Springfield.....	0	3	0	2	0	0	1	1	0	1	8
Michigan:											
Detroit.....	30	36	2	0	0	20	4	3	0	119	242
Flint.....	3	7	0	3	0	2	0	0	0	6	30
Grand Rapids.....	4	1	0	0	0	0	0	0	0	2	32
Wisconsin:											
Kenosha.....	1	3	1	0	0	0	0	0	0	16	7
Milwaukee.....	9	8	1	0	0	1	0	1	0	76	109
Racine.....	2	0	0	0	0	0	0	0	0	0	11
Superior.....	1	5	2	0	0	0	0	0	0	0	11
WEST NORTH CENTRAL											
Minnesota:											
Duluth.....	4	2	1	0	0	0	0	0	0	4	24
Minneapolis.....	13	2	3	0	0	0	1	0	0	7	78
St. Paul.....	7	4	2	0	0	4	1	0	0	34	60
Iowa:											
Davenport.....	0	0	0	1			0	0		0	
Des Moines.....	1	0	1	2			0	0		0	25
Sioux City.....	1	1	1	0			0	0		5	
Waterloo.....	1	0	0	1			0	0		2	
Missouri:											
Kansas City.....	2	4	1	0	0	7	2	2	0	7	9
St. Joseph.....	0	1	1	1	0	4	0	0	0	0	28
St. Louis.....	7	4	0	1	0	9	4	4	0	30	214
North Dakota:											
Fargo.....	1	0	0	0	0	0	0	0	0	3	11
Grand Forks.....	1	1	0	0			0	0		0	
South Dakota:											
Aberdeen.....	0	2	0	0			0	0		0	
Sioux Falls.....	0	4	0	0			0	0		0	9

City reports for week ended July 14, 1928—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber- culosis, deaths re- ported	Typhoid fever			Whoop- ing cough, cases re- ported	Deaths, all causes
	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported		
WEST NORTH CENTRAL—continued											
Nebraska:											
Lincoln.....	0	0	0	0	0	0	0	0	0	4	12
Omaha.....	1	0	2	3	0	0	0	0	0	0	48
Kansas:											
Topeka.....	1	0	0	0	0	0	0	0	0	3	18
Wichita.....	0	0	2	0	0	0	0	2	0	9	23
SOUTH ATLANTIC											
Delaware:											
Wilmington....	1	0	0	0	0	2	1	0	0	2	33
Maryland:											
Baltimore.....	8	4	0	0	0	21	5	3	0	93	195
Cumberland....	0	0	0	0	0	1	0	0	0	0	6
Frederick.....	0	0	0	0	0	0	0	0	0	0	2
District of Col.:											
Washington....	5	10	0	0	0	8	3	1	0	12	121
Virginia:											
Lynchburg....	1	1	0	0	0	1	0	1	0	9	10
Norfolk.....	1	2	0	0	0	2	1	0	0	0	3
Richmond.....	1	0	0	0	0	7	2	3	0	0	50
Roanoke.....	0	0	0	0	0	1	1	0	0	0	13
West Virginia:											
Charleston....	0	0	1	0	0	2	1	0	1	0	23
Wheeling.....	1	0	0	0	0	1	0	0	0	0	16
North Carolina:											
Raleigh.....	0	0	0	0	0	1	0	0	0	5	11
Wilmington....	0	1	0	0	0	0	0	0	0	1	4
Winston-Salem	0	0	0	0	0	1	3	1	0	0	15
South Carolina:											
Charleston....	0	0	0	0	0	0	1	1	1	5	29
Columbia.....	0	0	0	0	0	1	1	0	0	1	20
Greenville....	0	0	0	0	0	0	1	0	0	1	4
Georgia:											
Atlanta.....	2	1	2	0	0	6	3	4	0	2	68
Brunswick....	0	0	0	0	0	1	1	2	0	0	9
Savannah....	0	0	0	0	0	2	1	1	0	0	27
Florida:											
Miami.....	1	0	0	0	0	0	1	0	0	0	25
St. Petersburg.	0	0	0	0	0	3	0	0	0	0	9
Tampa.....	0	1	0	0	0	2	0	0	0	0	33
EAST SOUTH CENTRAL											
Kentucky:											
Covington....	0	1	0	0	0	2	0	0	0	0	26
Louisville....	1						4				
Tennessee:											
Memphis.....	1	2	1	0	0	4	6	4	0	6	83
Nashville....	0	0	0	0	0	3	6	0	0	2	47
Alabama:											
Birmingham.	1	2	2	1	0	5	4	5	1	7	63
Mobile.....	0	0	1	0	0	2	0	1	1	1	12
Montgomery..	0	2	1	0			1	0		0	
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith....	1	0	0	0			2	0		1	
Little Rock..	0	1	1	0	0	5	2	1	0	0	8
Louisiana:											
New Orleans..	1	1	0	0	0	15	3	2	0	1	139
Shreveport..	0	1	1	0	0	2	1	1	0	0	28
Oklahoma:											
Oklahoma City	1	3	1	1	0	4	3	3	0	0	31
Texas:											
Dallas.....	1	1	0	0	0	2	3	7	0	15	44
Fort Worth..	0	1	0	1	0	4	2	1	1	0	33
Galveston....	0	0	0	0	0	0	0	0	0	0	19
Houston.....	1	1	1	0	0	2	2	2	1	0	57
San Antonio..	1	2	0	1	0	7	1	3	0	0	70

City reports for week ended July 14, 1928—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
MOUNTAIN											
Montana:											
Billings.....	0	0	0	1	0	0	0	0	0	0	5
Great Falls.....	0	0	0	6	0	1	0	0	0	0	8
Helena.....	0	0	0	0	0	0	0	0	0	0	5
Missoula.....	0	0	1	0	0	0	0	0	0	0	13
Idaho:											
Boise.....	0	0	1	0	0	0	0	0	0	1	2
Colorado:											
Denver.....	6	5	1	0	0	5	1	0	0	18	65
Pueblo.....	0	1	0	0	0	1	0	0	0	0	10
New Mexico:											
Albuquerque.....	0	0	0	1	0	2	0	0	0	0	10
Utah:											
Salt Lake City.....	1	1	1	3	0	1	0	1	0	15	---
Nevada:											
Reno.....	0	0	0	0	0	0	0	0	0	0	3
PACIFIC											
Washington:											
Seattle.....	4	1	2	0	---	---	1	3	---	13	---
Spokane.....	1	0	3	12	---	---	0	0	---	2	---
Tacoma.....	1	8	2	0	0	2	0	0	0	2	---
Oregon:											
Portland.....	2	2	6	14	0	3	0	0	0	0	72
California:											
Los Angeles.....	10	6	4	0	0	25	4	3	0	48	228
Sacramento.....	0	3	0	0	0	3	0	0	0	4	21
San Francisco.....	5	11	0	0	0	16	1	3	1	8	139

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston.....	0	0	0	0	0	0	0	1	0
Fall River.....	1	1	0	0	0	0	0	0	0
Connecticut:									
Hartford.....	0	0	1	1	0	0	0	0	0
MIDDLE ATLANTIC									
New York:									
New York.....	11	13	0	0	0	0	3	4	0
Syracuse.....	0	0	0	0	0	0	0	1	0
Pennsylvania:									
Philadelphia ¹	0	0	0	2	0	0	0	0	0
Pittsburgh.....	3	1	0	0	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio:									
Cleveland.....	3	0	0	1	0	0	0	1	0
Toledo.....	0	0	1	1	0	0	0	0	0
Indiana:									
Indianapolis.....	0	2	0	0	0	0	0	0	0
Illinois:									
Chicago.....	5	4	0	0	0	0	2	4	1
Michigan:									
Detroit.....	4	0	0	1	0	0	1	0	0
Wisconsin:									
Milwaukee.....	1	1	0	0	0	0	1	0	0
Superior.....	1	0	0	0	0	0	0	0	0

¹ Dengue: 2 cases at Philadelphia, Pa.

City reports for week ended July 14, 1928—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
WEST NORTH CENTRAL									
Minnesota:									
Duluth.....	3	2	0	0	0	0	0	0	0
Minneapolis.....	0	1	0	0	0	0	0	0	0
Missouri:									
St. Louis.....	5	2	0	0	0	0	1	0	0
Nebraska:									
Omaha.....	0	0	0	1	0	0	0	0	0
SOUTH ATLANTIC ¹									
Maryland:									
Baltimore.....	0	0	1	0	0	0	1	0	1
North Carolina:									
Raleigh.....	0	0	0	0	0	2	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	1	1	0	0	0
Columbia.....	0	0	0	0	0	2	0	0	0
Georgia:									
Brunswick.....	0	0	0	0	0	1	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Nashville.....	0	0	0	0	1	0	0	0	0
Alabama:									
Birmingham.....	0	0	0	0	0	2	0	0	0
Mobile.....	0	0	0	0	1	1	0	0	0
Montgomery.....	0	0	0	0	1	0	0	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock.....	0	0	0	0	1	1	0	0	0
Louisiana:									
New Orleans.....	0	0	0	0	2	0	1	0	0
Shreveport.....	0	0	0	0	0	1	0	0	0
Texas:									
Dallas.....	0	0	0	0	0	0	0	1	0
Fort Worth.....	0	0	0	0	0	1	0	1	1
Houston.....	0	0	0	0	0	1	0	0	0
MOUNTAIN									
Colorado:									
Denver.....	0	1	0	0	0	0	0	1	1
Nevada:									
Reno.....	0	0	0	1	0	0	0	0	0
PACIFIC									
Washington:									
Seattle.....	1	0	0	0	0	0	0	0	0
Oregon:									
Portland.....	0	0	0	0	0	0	0	0	1
California:									
Los Angeles.....	0	0	0	0	0	0	1	3	0
San Francisco.....	0	0	0	0	0	0	1	1	0

¹ Typhus fever: 2 cases; 1 at Savannah, Ga., and 1 at Tampa, Fla.

The following table gives the rates per 100,000 population for 101 cities for the five-week period ended July 14, 1928, compared with those for a like period ended July 16, 1927. The population figures used in computing the rates are approximate estimates as of July 1, 1928 and 1927, respectively, authoritative figures for many of the cities not being available. The 101 cities reporting cases had esti-

mated aggregate populations of approximately 31,657,000 in 1928 and 31,050,000 in 1927. The 95 cities reporting deaths had nearly 30,961,000 estimated population in 1928 and nearly 30,370,000 in 1927. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, June 10 to July 14, 1928—Annual rates per 100,000 population compared with rates for the corresponding period of 1927¹

DIPHTHERIA CASE RATES

	Week ended—									
	June 16, 1928	June 18, 1927	June 23, 1928	June 25, 1927	June 30, 1928	July 2, 1927	July 7, 1928	July 9, 1927	July 14, 1928	July 16, 1927
101 cities.....	² 145	150	117	161	³ 114	140	⁴ 87	121	⁵ 84	114
New England.....	115	110	78	116	⁶ 65	88	62	91	80	133
Middle Atlantic.....	242	216	185	269	186	212	147	196	116	164
East North Central.....	123	141	118	132	116	119	79	102	82	95
West North Central.....	71	79	62	46	53	59	29	38	53	53
South Atlantic.....	61	117	58	106	37	143	⁶ 51	85	58	53
East South Central.....	² 29	41	25	35	10	20	⁷ 16	41	⁷ 7	25
West South Central.....	52	54	52	66	48	120	16	50	40	70
Mountain.....	44	206	35	152	⁸ 18	126	27	108	71	81
Pacific.....	110	115	72	112	86	76	49	86	72	112

MEASLES CASE RATES

101 cities.....	² 858	360	653	301	³ 498	271	⁴ 323	198	⁵ 265	154
New England.....	995	407	933	328	⁶ 898	342	722	300	777	242
Middle Atlantic.....	1,399	281	1,102	247	653	200	455	154	349	122
East North Central.....	678	261	424	213	474	206	266	182	215	110
West North Central.....	556	247	341	216	382	204	171	93	117	105
South Atlantic.....	599	691	470	529	361	446	⁶ 237	276	124	220
East South Central.....	² 458	182	449	132	150	81	⁷ 68	76	⁸ 233	61
West South Central.....	112	265	44	128	32	149	20	112	24	103
Mountain.....	681	341	336	448	⁹ 406	493	354	134	239	170
Pacific.....	110	969	143	841	⁹ 104	773	38	538	26	447

SCARLET FEVER CASE RATES

101 cities.....	² 166	198	143	189	³ 105	128	⁴ 74	99	⁵ 52	84
New England.....	223	265	170	237	⁶ 197	221	122	174	87	130
Middle Atlantic.....	162	223	146	222	100	148	58	123	37	91
East North Central.....	220	215	181	209	116	131	96	91	71	89
West North Central.....	161	162	138	158	113	89	90	91	35	71
South Atlantic.....	105	81	93	96	84	81	⁶ 60	54	35	56
East South Central.....	² 80	71	85	81	65	56	⁷ 73	46	⁸ 51	30
West South Central.....	44	8	44	37	40	17	36	41	28	37
Mountain.....	71	663	27	439	⁹ 72	287	27	117	62	224
Pacific.....	156	180	161	138	⁹ 75	86	61	60	74	50

¹ The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1928, and 1927, respectively.

² Louisville, Ky., not included.

³ Hartford, Conn., Helena, Mont., and San Francisco, Calif., not included.

⁴ Greenville, S. C., and Montgomery, Ala., not included.

⁵ Hartford, Conn., not included.

⁶ Greenville, S. C., not included.

⁷ Montgomery, Ala., not included.

⁸ Helena, Mont., not included.

⁹ San Francisco, Calif., not included.

Summary of weekly reports from cities, June 10 to July 14, 1928—Annual rates per 100,000 population compared with rates for the corresponding period of 1927—Continued

SMALLPOX CASE RATES

	Week ended—									
	June 16, 1928	June 18, 1927	June 23, 1928	June 25, 1927	June 30, 1928	July 2, 1927	July 7, 1928	July 9, 1927	July 14, 1928	July 16, 1927
101 cities.....	10	19	7	16	10	18	6	16	7	9
New England.....	0	0	0	0	0	0	0	0	0	0
Middle Atlantic.....	0	0	0	0	0	0	0	0	0	0
East North Central.....	11	21	9	12	9	21	6	15	7	17
West North Central.....	24	30	23	57	31	38	16	34	12	14
South Atlantic.....	14	36	4	29	2	18	7	23	0	9
East South Central.....	58	56	20	56	10	35	7	51	7	25
West South Central.....	20	12	24	12	8	12	4	0	4	8
Mountain.....	44	54	9	90	144	63	44	45	88	36
Pacific.....	18	65	15	21	29	73	15	73	31	13

TYPHOID FEVER CASE RATES

101 cities.....	7	13	7	11	16	15	14	16	17	21
New England.....	2	12	9	2	25	7	9	14	14	19
Middle Atlantic.....	2	6	1	4	8	6	9	8	9	11
East North Central.....	3	6	4	6	6	5	4	5	11	16
West North Central.....	4	4	4	6	12	8	8	10	16	43
South Atlantic.....	18	27	12	40	33	22	19	34	32	43
East South Central.....	44	81	40	61	100	132	68	162	73	152
West South Central.....	36	37	28	21	40	74	64	17	64	74
Mountain.....	9	18	0	18	27	9	9	18	9	27
Pacific.....	20	8	15	8	11	16	26	10	23	8

INFLUENZA DEATH RATES

95 cities.....	11	5	6	7	7	3	8	3	5	3
New England.....	14	2	5	5	5	5	9	2	5	5
Middle Atlantic.....	11	5	9	6	6	2	10	4	3	2
East North Central.....	14	5	6	5	5	3	3	3	4	1
West North Central.....	4	2	0	10	8	2	8	0	4	2
South Atlantic.....	7	9	7	2	5	5	5	4	7	5
East South Central.....	31	5	5	27	37	0	21	16	8	5
West South Central.....	16	17	4	4	12	4	25	0	25	8
Mountain.....	9	9	0	27	18	9	18	0	18	9
Pacific.....	7	0	3	10	5	3	0	3	10	7

PNEUMONIA DEATH RATES

95 cities.....	111	87	85	74	75	73	70	59	60	56
New England.....	136	107	90	86	67	60	51	60	67	56
Middle Atlantic.....	132	95	110	85	89	71	89	63	72	61
East North Central.....	111	86	60	71	63	80	67	49	54	45
West North Central.....	82	48	43	52	47	77	37	54	26	31
South Atlantic.....	77	60	93	45	72	56	57	58	49	61
East South Central.....	117	74	78	58	110	101	68	85	78	69
West South Central.....	74	93	86	42	70	72	67	64	70	68
Mountain.....	53	152	115	54	63	90	53	99	62	63
Pacific.....	88	100	84	131	103	69	78	55	54	97

¹ Louisville, Ky., not included.

² Hartford, Conn., Helena, Mont., and San Francisco, Calif., not included.

³ Greenville, S. C., and Montgomery, Ala., not included.

⁴ Hartford, Conn., not included.

⁵ Greenville, S. C., not included.

⁶ Montgomery, Ala., not included.

⁷ Helena, Mont., not included.

⁸ San Francisco, Calif., not included.

Number of cities included in summary of weekly reports, and aggregate population of cities in each group, approximated as of July 1, 1928 and 1927, respectively

Groups of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1928	1927	1928	1927
Total	101	95	31,657,000	31,050,300	30,960,700	30,369,500
New England.....	12	12	2,274,400	2,242,700	2,274,400	2,242,700
Middle Atlantic.....	10	10	10,732,400	10,594,700	10,732,400	10,594,700
East North Central.....	16	16	7,991,400	7,820,700	7,991,400	7,820,700
West North Central.....	12	10	2,683,500	2,634,300	2,566,400	2,518,500
South Atlantic.....	21	21	2,981,900	2,890,700	2,981,900	2,890,700
East South Central.....	7	6	1,048,300	1,028,300	1,000,100	980,700
West South Central.....	8	7	1,307,600	1,260,700	1,274,100	1,227,800
Mountain.....	9	9	591,100	581,600	591,100	581,600
Pacific.....	6	4	2,046,400	1,996,400	1,548,900	1,512,100

FOREIGN AND INSULAR

THE FAR EAST

Reports for three weeks ended July 7, 1928.—The following reports for the three weeks ended July 7, 1928, were transmitted by the Eastern Bureau of the Health Section of the Secretariat of the League of Nations, located at Singapore, to the headquarters at Geneva.

Plague, cholera, or smallpox was reported present in the following ports:

PLAGUE

Egypt.—Alexandria.
India.—Bassein, Bombay, and Rangoon.
French Indo-China.—Pnompenh.
China.—Hong Kong.

CHOLERA

China.—Canton.
Ceylon.—Colombo.
India.—Calcutta, Madras, Rangoon, Bombay, Negapatam, Vizagapatam.
French Indo-China.—Pnompenh, Saigon.
Siam.—Bangkok.

SMALLPOX

Anglo-Egyptian Sudan.—Suakin.
India.—Bombay, Calcutta, Madras, Rangoon, Negapatam, Moulmein, Vizagapatam.
French India.—Pondicherry.
Dutch East Indies.—Belawan-Deli, Balikpapan.
China.—Hong Kong, Shanghai.
Japan.—Osaka.
Kwantung.—Dairen.
Manchuria.—Mukden.
Formosa.—Keelung.

ARGENTINA

Rosario—Proposed deratization measures.—According to information dated June 13, 1928, it was resolved at a meeting including representatives of the National Department of Health, the municipal government, railway corporations, and exporting firms, to institute measures of rat destruction at Rosario, Argentina. It was decided to issue a municipal order making the killing of rats on premises and in buildings affording rat harborage obligatory on the owners of such property. The department of health undertook the drafting of a plan of campaign of rat destruction within the following 15-day period.

CANADA

Quebec Province—Communicable diseases—Week ended July 7, 1928.—The Bureau of Health of the Province of Quebec reports cases of certain communicable diseases for the week ended July 7, 1928, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis.....	2	Scarlet fever.....	46
Chicken pox.....	3	Smallpox.....	26
Diphtheria.....	38	Tuberculosis.....	25
German measles.....	3	Typhoid fever.....	6
Measles.....	76	Whooping cough.....	1

DENMARK

Communicable diseases—April, 1928.—Communicable diseases were reported in Denmark during the month of April, 1928, as follows:

Cases, April, 1928

Disease	Cases	Disease	Cases
Bronchopneumonia.....	2,645	Paratyphoid fever.....	3
Cerebrospinal meningitis.....	6	Pneumonia.....	618
Chicken pox.....	41	Poliomyelitis.....	20
Diphtheria.....	408	Puerperal fever.....	198
Erysipelas.....	10,159	Scarlet fever.....	4
Influenza.....	102	Tetanus.....	260
Jaundice.....	13	Tuberculosis.....	4
Lethargic encephalitis.....	4,455	Typhoid fever.....	147
Measles.....	639	Undulant (Malta) fever.....	1,483
Mumps.....		Whooping cough.....	

¹ Reported from State Serum Institute.

JAPAN

Tokyo city and prefecture—Dysentery—June 3–16, 1928.—During the two weeks June 3 to 16, 1928, dysentery was notified in the city and prefecture of Tokyo, Japan, as follows: Tokyo city, cases, 67; deaths, 25; Tokyo prefecture outside of city, cases, 177; deaths, 100. Population: City, 1,995,567; prefecture, 2,489,577.

MEXICO

Vera Cruz—Typhoid fever mortality—July 1, 1927–June 30, 1928.—Information received under date of July 10, 1928, shows the occurrence of 70 deaths from typhoid fever at Vera Cruz, Mexico, during the period June 30, 1927, to June 30, 1928.

UNION OF SOUTH AFRICA

Smallpox—Typhus fever—May 27–June 9, 1928.—During the two weeks ended June 9, 1928, fresh outbreaks of smallpox were reported in the Frankfort district of the Orange Free State. During the same period outbreaks of typhus fever were reported in Cape Province, Natal, Orange Free State, and the Transvaal.

Kwangchow-Wan (see table below).

Persian Gulf.¹

Philippine Islands:

Cebu Port.²

Manila.

Siam.

Ayudhaya.

Bangkok.

Trad.

Straits Settlements: Singapore.

On vessel:

S. S. Hawaii Maru at Singapore from Saigon,

French Indo-China.

Place	July-Septem-ber, 1927	October-December, 1927	January, 1928		February, 1928		March, 1928		April, 1928		May, 1928		June, 1928	
			1-10	11-31	1-10	11-31	1-10	11-31	1-10	11-31	1-10	11-31	1-10	11-31
C	200	295	291	120	85	56	46	25	25	60	58	4		
D	139	214	61	84	61	83	26	29	18	48	39			
D														
D														
D	101	60	60	30	24	20	17	14	11	8	3	1		3
D	66	36	33	13	14	8	6	9	7	4	2	2		
C														
C														
D	3		2											
D	1		2			1								
C			11											

¹ The report of 10 cases of cholera in Tientsin, China (Public Health Reports, July 27, 1928, p. 2013), was the result of an error. The cases were gastroenteritis.

² A case of cholera was reported, July 19, 1928, on the island of Hengam, in the Persian Gulf.

³ A case of suspected cholera was reported, July 25, 1928, at the port of Cebu, Philippine Islands.

Place	July-Septem-ber, 1927	October-December, 1927	January, 1928		February, 1928		March, 1928		April, 1928		May, 1928		June, 1928	
			1-10	11-31	1-10	11-31	1-10	11-31	1-10	11-31	1-10	11-31	1-10	11-31
Indo-China (French) (see also table above):														
Annam.....	3,179	370	287	36	14	18	18	23	17	11	18	4	26	13
Cambodia.....	251	337	54	38	22	33	22	92	43	102	51	34	47	20
Cochin-China.....	469	391	265	178	153	206	217	245	277	316	240	140	139	125
Laos.....	246	77												143
Tonkin.....	1,297	3	1						1	4	1	9	1	16
Kwangchow-Wan.....	16													8
														2

Straits Settlements: Singapore.....	C	1	3	1	1	1	1
Syria (see also table below):	D	1	2	1	1	1	1
Beirut.....	C						2
Tunisia.....	C						
Union of South Africa:							
Cape Province.....	C	1					
Orange Free State.....	D	1	5	5	5	5	
Union of Soviet Socialist Republics:	D						
Astrakhan—Azary District.....	D	4	1	5	5		
Venezuela: State of Miranda—Tacata and Cua. C	C						
On vessel.....	D		P				
S. S. Tyneric, at Barbados, from New Orleans.....	C					1	

* 8 cases of plague with 6 deaths were reported in Bengardane region, Tunisia, Mar. 17 to 27, 1928.

Place	October-December, 1927	January, 1928	February, 1928	March, 1928	April, 1928	May, 1928	June, 1928
Algeria (see also table above):							
Algiers.....	C 2					1	
Angora.....	C 3						
British East Africa (see also table above):							
Kenya.....	C 62	26	24	19	17	11	
Ecuador: Guayaquil.....	D 18	4	6	10	5	1	
Plague-infected rats.....	D 5	4	3	1			
Indo-China (see also table above):	C 31	23	31	21			
Kwangchow-Wan.....	C 10	7					
Madagascar (see also table above):	C 682	427	342	18	18	9	
Amboitra Province.....	D 605	388	317	171	159	90	
Antistrabe Province.....	D 17	96	66	29	25	25	
Itasy Province.....	D 109	117	108	56	35	35	
Moramanga Province.....	D 104	83	108	54	34	31	
Syria: Beirut (see also table above).....	D 94	29	17	3	1		
Tlissouane.....	D 95	19	25	12			
Tlissouane.....	D 83	19	24	12			
Madagascar—Continued.							
Tananarive Province.....	C 408	155	123	70	34		
Nigeria (see also table above).....	D 354	120	102	61	30		
Peru.....	D 63	16	16				
Cusco.....	D 61	10	16				
Lima.....	D 84	41	41	52			
Callao.....	D 11	14	14	9			
Senegal (see also table above).....	D 3	6					
Rufisque.....	C 5	17	13	4	8	81	216
Tlissouane.....	D 118	5	13	4	40	17	15
Tlissouane.....	C 9					9	11
Tlissouane.....	C 30					30	72
Tlissouane.....	C 23					23	40
Tlissouane.....	C 51					51	105
Tlissouane.....	C 51					51	95
Tlissouane.....	C 67					67	51
Tlissouane.....	C 1						1

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, Death; P, present]

Place	Week ended—													
	April, 1928		May, 1928				June, 1928				July, 1928			
	14	21	28	5	12	19	26	2	9	16	23	30	7	14
Jan. 15-16, Feb. 10, 1928	1,520													
Feb. 12-13, Mar. 10, 1928	1,473													
Mar. 11-12, Apr. 7, 1928														
Great Britain														
England and Wales														
Birmingham	1,341	321	376	321	319	336	288	286	365	282	280	219	182	
Bristol	1	1	1	1	1	1	1	1	1	1	1	1	1	
Cardiff	1	1	1	1	1	1	1	1	1	1	1	1	1	
Leeds	1	1	1	1	1	1	1	1	1	1	1	1	1	
Liverpool	1	1	1	1	1	1	1	1	1	1	1	1	1	
London	1	1	1	1	1	1	1	1	1	1	1	1	1	
Manchester	1	1	1	1	1	1	1	1	1	1	1	1	1	
Newcastle-upon-Tyne	1	1	1	1	1	1	1	1	1	1	1	1	1	
Nottingham	1	1	1	1	1	1	1	1	1	1	1	1	1	
Sheffield	1	1	1	1	1	1	1	1	1	1	1	1	1	
Stoke on Trent	1	1	1	1	1	1	1	1	1	1	1	1	1	
Greece (see table below)														
Hedjaz														
India	35	115												
Bassein	23	46												
Bombay	17,777	18,850	8,787	8,038	7,398	6,220	6,568	5,978						
Calcutta	3,709	3,826	1,958	1,738	1,601	1,341	1,334	1,358						
Karachi	1													
Madras	61	148	86	87	54	33	46	37	26	17	15	30	17	
Moulmein	24	78	120	32	34	27	25	22	18	13	15	8	11	
Nagapatam	58	71	134	48	51	31	40	41	23	23	23	16	14	
Rangoon	34	50	104	32	42	21	35	30	26	23	22	16	20	
			1											
	74	100	153	49	36	60	24	17	22	11	9	6	7	
	8	16	20	16	8	7	7	5	5	3	5	3	4	
	8	3												
	3													
	275	377	320	63	45	37	23	15	8	6	7	5	5	
	64	104	102	24	17	12	16	4	2	2	5	2	1	

Tuticorin.....	10	2	3	2	3	1	4	4	3	.....
Visagapatam.....	8	.....	.....	.....	.....	1	.....	.....	.....	.....
India (French):	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chandernagor.....	.....	.....	5	.....	5	.....	.....	.....	.....	.....
Pondicherry.....	47	0	18	12	15	9	6	3	2	.....
Indo-China (see also table below):	47	0	18	12	15	9	6	3	2	.....
Bangkok.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....
Bagdad.....	10	7	5	1	3	1	3	3	7	10
Barr.....	11	4	4	1	1	1	1	1	2	3
Beers.....	1	7	5	2	1	2	1	1	1	1
Italy:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Leghorn.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....
Palermo.....	.....	5	5	1	3	3	4	0	.....	.....
Rome and vicinity.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ivory Coast (see table below).	.....	5	10	13	1	2	1	1	1	2
Jamaica (outside Kingston) (alastrium)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Japan:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kobe.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nagoya.....	.....	4	15	8	.....	.....	.....	.....	.....	.....
Osaka.....	.....	1	2	1	.....	.....	.....	.....	.....	.....
Tokyo.....	.....	.....	94	1	1	1	.....	.....	.....	.....
Tokyo prefecture.....	.....	.....	1	1	1	1	1	1	1	.....
Yokohama.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Latvia (see table below).	.....	P	.....	.....	.....	.....	.....	.....	.....	.....
Mauretania.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mexico (see also table below).	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Acapulco.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Jalisco (State).....	.....	P	P	P	P	.....	.....	.....	.....	.....
Guadalajara.....	.....	1	2	2	1	4	5	7	4	2
Manzanillo.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
Masatlan.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mexico City and surrounding territory.	.....	2	1	.....	.....	1	.....	.....	.....	.....
Saltijo.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tampico.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Morocco (see table below).	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nigeria (see also table below):	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lagos.....	.....	7	1	.....	.....	.....	.....	.....	.....	.....
Southern Provinces.....	.....	.....	35	.....	.....	.....	.....	.....	.....	.....
Palestine: Jerusalem.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Persia (see table below).	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Poland.....	.....	3	1	1	5	2	2	1	1	2

